

**EXAMINING THE PERCEIVED NURSES' SUPPORT FOR SELF-MANAGEMENT
AMONG TYPE 2 DIABETES MELLITUS PATIENTS IN BOTSWANA**

by

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DECLARATION

I declare that **EXAMINING THE PERCEIVED NURSES' SUPPORT FOR SELF-MANAGEMENT AMONG TYPE 2 DIABETES MELLITUS PATIENTS IN BOTSWANA** is my own work and that all the sources that I have used or quoted have been indicated and acknowledged by means of complete references and that this work has not been submitted before for any other degree at any other institution.



30 July 2018

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SIGNATURE

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EXAMINING THE PERCEIVED NURSES' SUPPORT FOR SELF-MANAGEMENT AMONG TYPE 2 DIABETES MELLITUS PATIENTS IN BOTSWANA

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ABSTRACT

Patients' perceptions of health care and support is a key determinant in self-efficacy and active participation in the management of chronic conditions. Nurses play a significant role in Diabetes Self-Management Education by providing clients with tools, empowerment and knowledge to self-manage their condition.

The purpose of this study was to examine and describe diabetes patients' perceptions of nurses' support for self-management in Botswana. The aim was to improve clients' skills in self-management and to strengthen diabetes health care management. This study was carried out at the Diabetes Clinic of Excellence, in the city of Francistown, the second largest city in Botswana. The study population comprised of Type 2 Diabetes patients registered at the Diabetes Clinic for their follow-up. All were aged 18 years and above. Three hundred and fifty-four (354) patients participated in the study.

The study used a non-experimental, descriptive, quantitative design. Probability sampling method was used to recruit diabetes patients from the selected clinic. Data were collected using a structured, researcher developed, questionnaire mostly in face-to-face interviews, a few participants completed the questionnaire. The Quantitative data analysis included descriptive and inferential statistics using SPSS (Statistical Package for Social Science Software (version 25). Spearman rho was used to determine statistical correlation between patients' perceptions and their self-management practices.

The findings showed that generally, patients' perceptions of professional support was positive regarding most of the constructs measured. However, there were areas that showed less satisfaction with the support such as foot-care, risk control, and ability to identify signs of low and high blood sugar level and carrying of Identification Band (ID). Perceptions of nurses' motivational behaviour showed varied responses. Patients' self-care activities were sub-optimal and showed some variations which tended to correspond

with their perceptions of professionals support. The Spearman's correlation results ranged from strong, moderate, and weak positive correlation. A few demographic variables showed some impact on self-care activities. Based on the findings, the study concludes that professional support through DSME and DSMS, self-management and patients' perceptions of care play a significant role in diabetes management.

Key concepts

Glycemic control; nurses' support; patients' perceptions; self-management; self-care; Type 2 Diabetes Mellitus.

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LIST OF ABBREVIATIONS

ADA	American Diabetes Association
DDCE	Donga Diabetic Clinic of Excellence
DM	Diabetes Mellitus
DSME	Diabetes Self-Management Education.
DSMS	Diabetes Self-Management Support
IFD	International Diabetes Federation.
MOH	Ministry of Health
NCDs	Non-Communicable Diseases
USD	United States Dollar
WHO	World Health Organization

CHAPTER 1

ORIENTATION OF THE STUDY

1.1 INTRODUCTION

Diabetes Mellitus is a prevalent and costly chronic progressive metabolic disorder, which results in substantial morbidity and mortality rates (Wu 2007:1). It is a significant healthcare problem in Botswana. The latest World Health Organization (WHO) World Health Rankings data, published in May 2014, revealed that Botswana's diabetes-related deaths had reached 569 or 3.81 % of the total deaths, and ranked as number 22 in the world, with the age-adjusted death rate of 57.09 per 100 000 of the population.

The diabetes epidemic poses a significant threat to the global healthcare structures and national economy. It is taking a toll on the people and the economy of the sub-Saharan Africa countries (Bahendeka 2010:1). Behavioural change interventions can, however, prevent or delay the development of severe diabetes complications (Vermout, Milder, Wichard, Baan, Schelthour, Wester & Oers 2013:78). Diabetic management places patients at a pivotal position concerning their healthy living. It calls for the adequate empowerment of patients, to enable them to live healthily.

Diabetes self-management places nurses' support at the center and the front line of diabetes management. Their contributions provide improved self-care and quality of life by reducing emergencies, which reduces frequency of physician visits (Levich 2011:15, 20). This study assumed that the patients' perception of nurses' support was essential in diabetes self-management. The chapter discusses the background, significance of the study, its purpose, objectives, research problems, research questions, the definition of terms, and the summary of the research method.

1.2 RESEARCH PROBLEM

1.2.1 Background to the problem

Diabetes Mellitus (DM) is a chronic progressive metabolic disorder that has emerged as a significant public health problem. It affects many people worldwide, both in number and cost of management (Gebremedhin, Abdulhakim & Periasamy 2014:164; Selah, Mumu, Ara, Begum & Ali 2012:112). Type 2 diabetic patients are vulnerable to severe and expensive chronic multiple complications which affect the heart, kidneys, eyes, feet, and the burden of escalating health costs (Fan 2012:1; Levich 2011:15; Motala & Ramaiya 2010:11).

The enormous burden of diabetes has serious economic implications for individuals, family, community, and a nation at large (Isara, Omonigho & Olaoye 2014:10). Behavioural change can, however, prevent or delay the development of severe diabetes complications (Vermout et al 2013:83). Diabetes as a chronic disease requires a person living with the disease, to make various self-management decisions and to perform complex self-care activities (Powers, Bardsley, Cypress, Duker, Funnell, Fischi, Maryniuk, Siminerio & Vivian 2015:1372).

The management of diabetes is mainly the responsibility of a patient if more emphasis is on prevention of complications, and the adherence to diabetes self-care regimens. Previous systematic reviews have shown that self-management interventions using educational or behavioural strategies, encouraged the individuals' performance of self-care activities like blood glucose monitoring, physical activity, and medical care (Minet, Moller, Vach, Wagner & Herinksen 2010:29). Self-management places diabetic patients at a pivotal position regarding their healthy living and calls for diabetic patients to be empowered to live healthily.

A study conducted in Ethiopia also showed that diabetic patients who received information less frequently were less likely to adopt prescribed self-care behaviours. These patients complained that little emphasis was on health education for diabetic patients in many healthcare facilities (Isara et al 2014:10-11). An estimated 44 000 people in Botswana were living with diabetes, which represented a prevalence rate of 4.1% (Ngwanaamotho 2010:1). A review of patients' records at Donga Diabetes Clinic revealed

that a higher proportion of diabetes mellitus patients have one or more comorbidity, which was responsible for premature deaths and disabilities on a large scale (Hall, Thomsen, Henriksen & Lohse 2011:564). Several government initiatives and interventions provide self-care support. These support systems include the establishment of Diabetes Specialised Clinics throughout the country, support from nurses through information, skill training, and multi-disciplinary team networks.

According to D'Souza, Nairy, Amirtharaj and Venkatesaperumal (2015:81), diabetes education regarding treatment and self-care management like drug therapy, risk factor control, and screening for related diabetes complications, show to be cost-effective interventions. These interventions reduce the burden of diabetes by implementation of health teaching or induction processes instituted by health care workers. Mufunda, Wikby, Björn and Hjelm (2016:79) argued that health education and support by health care practitioners could reduce the burden of diabetes. Levich (2011:15) confirms that diabetes self-management places nurses at the center and the front line of diabetes management. This is due to the contributions nurses make in enhancing self-care and improving quality of life. They achieve this by reducing the diabetes emergencies and frequency of physician visits. This implies that nurses are better placed to provide the diabetes education and support necessary to promote self-management.

Over the last decade, increased attention has been placed on measuring and improving patients' health care experience. Therefore, the inclusion of the patients' perspectives on the health care provided, may lead to a better understanding of how care impacts the entirety of patients' life (Gallan & Lavela 2014:18). It is commonly accepted that behavioural goal setting is an effective strategy to support self-management behaviours.

1.2.2 Statement of the research problem

Diabetes mellitus is a chronic progressive metabolic disorder that has emerged as a significant public health problem. It was affecting many people worldwide, in both number and cost of management (Gebremedhin et al 2014:164). An estimated 44 000 people in Botswana were living with diabetes. This translates to a prevalence rate of 4.1% (Ngwanaamotho 2010:1). The Donga Diabetes Clinic's records revealed that a higher proportion of diabetic patients have one or more comorbidity and the condition is responsible for premature deaths and disabilities on a large scale (Hall et al 2011:564).

Literature shows that both the management and prevention of diabetes-related complications, rest on the patient's self-care and self-management skills (Jansiraninatarajan 2013:29; Steed, Cooke & Newman 2003:5). The goal of Diabetes Self-Management Education (DSME) is to achieve and maintain patients' competence, independence, and self-efficacy in managing their illness by using a compliance-oriented approach (Kolaric, Ajdukovic, Racz, Boskovic, Leppee, Culig, Fuckar, Mandic-Zovko, Rat & Jakovljevic 2014:513).

Nurses play a significant role in DSME by providing clients with tools, empowerment, and knowledge to self-manage their condition (Levich 2011:21). Patients' perception of this support is critical in the development of individual self-care decision-making (D'Souza et al 2015:81). In Botswana, it is not known how diabetic patients perceive nurses' support for self-management or how these perceptions influence their self-management. Hence, the need for this study.

1.3 PURPOSE OF THE STUDY

The purpose of this study was to examine and describe type 2 diabetes mellitus patients' perceptions of nurses' support for self-management in Botswana. The aim was to improve client skills in self-management and to strengthen the diabetes health care management.

1.3.1 Research objectives

The following objectives defined the direct achievement of the study purpose:

- Describe the perceptions of type 2 diabetes mellitus patients of nurses' support for self- management.
- Examine self-management practices among type 2 diabetes mellitus patients.
- Determine the relationship between perceived nurses' support and self-management among DM patients.

1.4 RESEARCH QUESTIONS

- How do type 2 diabetes mellitus patients perceive nurses' support for self-management?
- What are the self-management practices of type 2 diabetes mellitus patients?
- What is the relationship between perceived nurses' support and self-management among type 2 diabetes mellitus patients?

1.5 SIGNIFICANCE OF THE STUDY

There is a shortage of data from sub-Saharan Africa, which focuses on the professional support, patient experiences, and self-management behaviours of people diagnosed with type 2 diabetes mellitus. As mentioned earlier, health professionals play a pivotal role in diabetes management. The level and extent of diabetic patients' self-care preparedness is determined by the professional commitment to patient empowerment strategies. Diabetes education must be responsive to advances in knowledge, treatment strategies, educational strategies, psychosocial interventions, and the changing healthcare environment.

Deep insight and understanding to how patients perceive nurses' support, will assist health professionals to introspect and to take corrective measures as to how they prepare Diabetes mellitus patients for self-management. The aim was that both the public and health professionals would benefit from the study. The study document self-care support and the self-management practices of diabetic patients in Francistown. Patient views are extremely relevant for practice. This is the reason patients' perspectives is the focus of this study. Nurses can derive a wealth of insights and understandings from this study to enable them to design acceptable educational packages for diabetic patients. Studies in the western countries on the perspective of patients have shown that a patient's general care perceptions are closely related to a patient's locus of control, positive attitude in diabetes management, and compliance to self-care activities (Hayashino & Ishii 2015:111). The study results are expected to inform protocols and policies regarding the empowerment and self-management induction processes for patients.

1.6 DEFINITIONS OF TERMS

1.6.1 Definitions of key concepts

- **Nurse**

The term refers to a person who has completed a program of primary, generalised nursing education and passed such examinations in the practice of nursing as determined by the Nursing and Midwifery Council of Botswana regarding Nurses and Midwives Act, 16 of 1999.

- **Diabetes-self-management education (DSME)**

Diabetes Self-Management Education is the ongoing process of facilitating the knowledge, skill and ability necessary for diabetes self-care. This process incorporates the needs, goals, and life experiences of the person with diabetes and is guided by evidence-based standards (Funnell, Brown, Childs, Haas, Hosey, Jensen & Maryniuk 2009:587).

- **Diabetes mellitus management**

Diabetes mellitus management addresses behavioural, dietary, lifestyle and pharmacological interventions aimed to maintain glycaemic control and to prevent complications (Zimmerman 2016:1).

Diabetic diet. In this study, diabetic diet refers to a diet that consists of lean meat, fish, high in fruits, legumes and vegetables, but low in grains, dairy products, salt or refined fats, carbohydrates and sugar. (Asif 2014: 1).

Sick day's rules. In this study, sick days rules refers to what diabetic patients have to do to care for themselves during times of illness. Includes taking usual dosage of medications, not omitting usual meals, taking a lot of fluids, checking blood sugar (hourly to 4 hourly) or urine glucose (2 to 4 hourly), not staying alone and knowing when to seek medical help (Fan 2012:13)

1.6.2 Operational definitions

Diabetes mellitus patients: In this study, the term refers to patients diagnosed with type 2 diabetes, 18 years and above, registered at the Donga Diabetes Clinic of Excellence for follow-up care and having one or more comorbidities.

Nurses' support: In this study, the concept refers to nursing activities contained in the DSME standards and guidelines, to prepare diabetes mellitus clients for self-management practices.

Patient perceptions: In this study, perception refers to the views and opinions of patients regarding the nurses' diabetes self-management education (DSME), and motivational behaviours in enhancing their self-management.

Self-management: In this study, self-management means the practices diabetic patients engage in to enhance their quality of life. These practices include compliance to a diabetic diet, correct self-medication, exercising appropriately, self-monitoring of blood sugar at home, foot care and risk control activities such as carrying sweat food, and an identification bracelet or tag.

1.7 RESEARCH METHODOLOGY

The research methodology provides the scope of how investigations were carried out and specified the type of information or data collected and the motive behind selecting designs and methods used in the study (Brink, Van der Walt & Van Rensburg 2012:199). In this study, the researcher used the quantitative approach systematically to describe perceptions of type 2 diabetes mellitus patients and their self-management activities, using a representative sample which enhanced generalisability of findings. The research methodology is described in detail in Chapter 3.

1.7.1 Research design

According to Babbie (2013:120), a research design serves as a study blueprint that reflects a set of decisions. These includes the topic studied, the population, methods used for which purpose, and the appropriate level of research questions. A quantitative, non-experimental, descriptive, and correlational method was implemented to examine and describe diabetes patients' perceptions of nurses' support for self-management.

1.7.2 Population and sample

1.7.2.1 Study population

According to Brink et al (2012:131), a population refers to an entire group of persons or object that is of interest to the researcher or that meets the criteria that the researcher is interested in studying. In this study, the target population comprised of diabetic patients registered at the Donga diabetes clinic for their follow-up visits. Population size was based on patients enrolled in the clinic between January and December 2016.

Inclusion criteria

- Patient diagnosed with type 2 diabetes mellitus attending Donga clinic.
- Type 2 diabetic patients aged 18 years and above and registered for follow-up care
- Patients diagnosed with type 2 diabetes mellitus with one or more comorbidities.

Exclusion criteria

- Diabetes patients below 18 years.
- Type 2 diabetic patients who are 18 years and above but without comorbidities.
- Diabetes type 2 patients who were not mentally fit, weak, or looking too ill.

1.7.2.2 Sampling methods

Sampling refers to the process of selecting a predetermined subset from an entire population to use the sample to learn about a given population (Maree 2016:192). Simple random sampling was used to select a study sample, using a sampling frame that comprised of all registered type 2 diabetes patients with comorbidities from January to December 2016. The calculation of the sample yielded 329. However, the study recruited 354 participants.

1.8 RESEARCH SETTING

This study was carried out at the Donga Diabetes Clinic of Excellence, an extension of Nyangabgwe Hospital. The clinic is situated in the city of Francistown, Botswana, and caters for comprehensive needs of diabetic patients. The clinic was chosen for its specialised services for diabetic patients, the accessibility to the population under study, and having a large catchment area.

1.9 DATA COLLECTION

1.9.1 Data collection instruments and process

A self-designed, interviewer-administered, structured questionnaire (Ellis 2013:100) was used to collect data. A face-to-face interview was used because of its greater response rate and reduced chances of missing data. It gave the interviewer an opportunity to clarify the misconception, allowed for the participation of illiterate people, and ensured a higher completeness rate (Ellis 2013:100).

1.9.2 Data collection process

The questionnaire was translated into Setswana and Kalanga language to accommodate the non-English-speaking patients. A Setswana teacher with a doctoral qualification validated the translation (also Kalanga by tribe), as well as Tswana and Kalanga members of the research unit at the Institute of Health Sciences. The research assistants received training in interviewing skills to enhance the reliability of data. Only research assistants that were familiar with the research process and spoke English, Kalanga, or Setswana, were used to interview participants after a comprehensive induction programme.

1.10 RELIABILITY AND VALIDITY

Reliability refers to the degree to which instruments were depended upon for consistency, stability, and repeatability (Brink et al 2012:169). A pilot study was carried out on 15 diabetes patients in two council clinics in Francistown. They met the criteria but did not form part of the final sample (Brink et al 2012:169). Cronbach's alpha coefficient test was implemented to establish the study instruments internal reliability (Maree 2016:41).

According to Brink et al (2012:170), validity is the ability of an instrument to measure the intended variable. Using literature review to develop the instrument enhanced the content validity of the questionnaire. Face and construct validity was established, by allowing experts to judge the relevance and appropriateness of items (Ary, Soresen, Jacobs & Walker 2014:253).

1.11 DATA MANAGEMENT AND ANALYSIS

Quantitative data analysis included descriptive and inferential statistical analysis (Brink et al 2012:57-58). Data management was sub-divided into five phases according to Creswell (2014:163).

Data were processed and analysed using the Statistical Package for Social Science Software (SPSS) version 25 for windows. Descriptive and inferential statistics determined the frequencies and strength of the relationship and statistical significance between patients' perceptions of the nurses' support for self-management, and their self-care activities (Brink et al 2012:179-180; Maree 2016:255).

1.12 ETHICAL CONSIDERATIONS

Ethical standards were considered in this study. All relevant authorities were contacted for permission to conduct the study (Annexure A). The researcher applied for ethical clearance from the Department of Health Sciences Higher Degrees Committee at the University of South Africa before data collection commenced. Letters were written to the Research Ethics Committee at the Ministry of Health in Gaborone, Botswana, the Institute of Health Sciences and Nyangabgwe Referral Hospital Research Ethics Committee. A

letter to request permission to conduct the study was submitted to the management of the Nyangabgwe Referral Hospital, which oversees the running of the Donga Diabetes Clinic of Excellence where the study was carried out. Permission to conduct the study was granted from different institutions boards (Annexure B).

Participants were informed of the nature of the study. They were provided with detailed information about the study intention, procedures, and expectations. A full explanation of the research study was provided by the researcher, and research assistant, to the patients and accompanying family members.

The explanations about the study was done in the local languages, Setswana, and Kalanga. The purpose of was to enable them to make an informed decision with regards to their involvement in the study. Participants signed the consent form as proof of their willingness to participate in the study (Annexure C). They were informed of their freedom to withdraw from the study at any time without consequences. Chapter 3 provides further details on the ethical principles applied in the study.

1.13 SCOPE AND LIMITATIONS

The study was limited to type 2 DM patients. The study focused only on their perceptions of nurses' support as indicated in Diabetes Self-care Management Education (DSME). Other dimensions of professional support were excluded in order to have maximum control over specific variables.

The study was conducted in only one of the two diabetes centres in Botswana.

1.14 STRUCTURE OF THE DISSERTATION

The study report contains the following five chapters:

Chapter 1: Orientation to the study

This chapter includes the introduction and background to the study, problem statement, and purpose of the study, study objectives, study questions and terminologies used in the

study. A summary of the methodology of the study, the significance of the study, scope and limitations are also part of this chapter.

Chapter 2: Literature review

This chapter includes a review of the literature on the burden of diabetes, the self-care behaviours of type 2 diabetes, self-efficacy, and the nurses' support for diabetes self-care. The chapter also deals with the importance of patients' perceptions of professional self-care support.

Chapter 3: Research methodology

This chapter includes the research methodology and design, the study population, sampling, and data collection method. It also presents the validity and reliability of the tools used, the data analysis method implemented, and details of the study design, methods, and ethical considerations.

Chapter 4: Data analysis, presentation, and description of research findings

The data analysis and research findings are discussed in this chapter.

Chapter 5: Interpretations, discussion of findings, conclusions, and recommendations

This chapter concludes the report by presenting a discussion of the results, strength and limitations of the study, conclusions, and recommendations.

1.15 CONCLUSION

This chapter focused on the introduction and background to the study and statement of the problem. It included the purpose, objectives, and research questions of the study. It also discussed the significance of the study, methodology and research design, as well as the suitability for using the quantitative approach to achieve the objectives of the study. Finally, the definition of crucial study concepts and the structure of the dissertation was outlined. The next chapter presents the literature review related to this study.

CHAPTER 2

LITERATURE REVIEW

2.1 INTRODUCTION

This chapter presents an overview of the related literature. The aim is to critically analyse what is known about this phenomenon (Brink et al 2012:70) and to relate that information to the objectives of this study. The chapter deals with diabetes and its prevalence, the burden of diabetes and the impact on quality of life. This is followed by professional support for self-management such as Diabetes Self-Management Education (DSME) and Diabetes Self-Management Support (DSMS). Lastly, the chapter presents patients' perception of care and barriers to self-care management. The chapter presents the related literature in an integrated manner, acknowledging the overlaps in the discussion.

2.2 DIABETES MELLITUS (DM): THE DISEASE

Diabetes mellitus is a chronic progressive endocrinal metabolic disorder of carbohydrate, protein, and lipid metabolism. Hyperglycaemia characterises diabetes mellitus due to relative (type 2 diabetes mellitus) or absolute (type 1 diabetes mellitus) insulin deficiency levels (Jackson, Adibe, Okonta & Ukwé 2014:404; Inkombele 2014:3). Type 2 diabetes mellitus is a severe illness associated with severe complications and increased mortality rates. It was estimated that the global incidence would increase to 552 million in 2030, posing a burden to countries (Vermount et al 2013:78; Inkombele 2014:19).

Koponen, Simonsen, Laamanen and Suominen (2015:1) reported that type 2 diabetes mellitus was affecting an increasing proportion of the population worldwide. The number of people diagnosed has doubled in the last 12 years. Diabetes mellitus patients are at risk of developing foot ulcers, cardiovascular complications, and neuropathy. These complications may result in amputations. They further stated that the complications are often present in 10% of people at the time of diagnosis. Medical care will also reduce the risk of long-term complications such as hypertension, cardiovascular diseases, and kidney failure (Raaijmakers, Hamers, Martens, Bagchus, De Vries & Kremers 2013:114).

The researcher maintains that behavioural change could help prevent or delay the associated disease burden and the development of complications.

This study focused on understanding what patients did to reduce their chances of developing the numerous, debilitating and life-threatening conditions associated with Diabetes mellitus. Information obtained from the study might support nurses to develop measures that would promote self-care behaviour and curb the onset of associated complications.

2.2.1 Diabetes mellitus in Africa

Diabetes mellitus is increasingly becoming a burden for most developing countries, including the under developed continents such as Asia and Africa (Dube, Broucke, Housiau, Dhoore & Rendall-Mkosi 2014:2). The prevalence of diabetes has reached epidemic proportion, and more than 70 % of people with diabetes mellitus live in low and medium income countries (Rwegerera, Moshomo, Gaenamang, Oyewo, Gollakota, Mhimbira, Fadare, Godman, Meyer & Rivera 2017:2). The pandemic in Africa is associated with lifestyle changes. These changes comprise shifting from an active traditional way to a modern sedentary lifestyle (westernisation, uncontrolled urbanisation). These lifestyles are associated with unhealthy diets that predisposed people to obesity (Gebremedhin et al 2014:165; Inkombele 2014:20, 22).

According to Mutyambizi, Pavlova, Chola, Hongoro and Groot (2018:1) diabetes is considered one of the leading causes of non-communicable disease (NCD) deaths in Africa. Diabetes contributed to 1.5 million deaths globally in 2015 and 321,100 deaths in Africa. The deaths in Africa affected people below the age of 60. The International Diabetes Federation (IDF) (2013) estimated that the number of people with diabetes in Africa would increase from 14.2 million in 2015, to 34 million in 2040 (Mutyambizi et al 2018:1). The high disease prevalence, together with high diabetes-related mortality rates, pose a substantial financial demand on both the households and African governments.

The updated 2013 profile of the International Disease Federation (IDF) (2013) estimated that Africa spends 7% of its healthcare budget on diabetes. Expenditure in 2015 was USD 3.4 billion and was expected to increase to 5 billion in 2040. These figures could be

incorrect, as it was believed that 66.7% of people living with diabetes in Africa, were undiagnosed (Mutymbizi et al 2018:2).

2.2.2 Trends and prevalence of diabetes mellitus in sub-Saharan Africa

Sub-Saharan Africa has the highest projected rates of increase in type 2 diabetes over the next 25 years (Goedecke, Mtintsilana, Dlamini & Kengne 2016:88). The authors further claim that most people with type 2 diabetes are younger than 60, with the highest proportion being between the age of 40-60 years. The region has the highest number of undiagnosed type 2 diabetes, with 66.7% of people with type 2 diabetes being unaware of their condition (Goedecke et al 2016:88). It was projected that non-communicable diseases would account for almost half of the deaths in sub-Saharan Africa by 2030, while deaths from infectious diseases, except HIV, rapidly declined (Price et al 2018:208). DM complications in sub-Saharan regions are retinopathy, neuropathy and nephropathy (Berhe, Demissie Kahsay & Gebru 2012:4222; Tesfaye, Tessema & Taha 2015:2).

The correlation between non-communicable diseases' incidence, the degree of urbanisation, and lifestyle changes place a double diabetes disease burden on people and health care systems in sub-Saharan countries (Gebremedhin et al 2014:165). Diabetes mellitus patients in sub-Saharan Africa often do not receive treatment until the illness has progressed and complications, which required hospital treatment, have developed (Nuche-Berenguer & Kupfer 2018:1). Most patients delay in seeking medical attention. This is attributed to their lack of general knowledge about the signs and symptoms of diabetes, and the silent nature of the illness (Gebremedhin et al 2014:165).

Sub-Saharan Africa is overwhelmed, and its healthcare systems struggle to remain relevant to its diabetes patients. Health promotion, education and patient compliance help to reduce the burden of the disease (Gebremedhin et al 2014:165). DM patients need help with managing their condition. They need to be given information to help them understand the importance of adopting a healthy lifestyle.

2.2.2.1 *Diabetes mellitus prevalence in Botswana*

Botswana reported an epidemiological transition. Non-communicable diseases (NCDs) are on the increase, according to the health impact of diabetes mellitus Botswana

(Ministry of Health 2011:11). The 2016 WHO Diabetes Country Ranking Profile (WHO 2016:2, 3, 4), shows that diabetes mellitus accounted for 4% of deaths and was among the top five causes of death, it also caused 49.7% disabilities in Botswana. The probability of people dying between the ages of 30-70 from the four main non-communicable diseases (NCDs), is estimated to be 21%. Diabetic patients in Botswana are reported to be having a relatively poor health-related quality of life (HRQL) and most patients with complications, arrive late for healthcare (Rwegerera et al 2017:5). The authors lament that there is currently, scarcity of data about the actual burden of diabetes in Botswana, the prevalence could be higher. Diabetes Association of Botswana (2015:1) confirms that the exact prevalence of diabetes mellitus in Botswana and several African countries is unknown.

The high prevalence of the diabetes disease is a significant concern in Botswana. The Ministry of Health established two specialised diabetes clinics. One clinic serves the northern part of the nation, and the other clinic the southern part. The clinic in the south is in Gaborone, the second clinic is in Francistown, where the study was conducted. Apart from these two diabetes clinics, every district hospital has an Out-Patient Department Diabetes Clinic. Nurses in these clinics have to provide standardised diabetes education to prevent possible complications. By doing so, they help patients to identify early signs and to maintain glycaemic control. It also equips patients with skills, such as foot care, blood sugar/urine testing for glucose, and provide continual diabetes self-care support to patients (own experience).

2.3 THE BURDEN OF DIABETES MELLITUS

The burden of disease is a negative term that focuses on hardship or losses associated with a disease. It depicts the financial, social, and psychological and disability hardship associated with disease or injury. It refers to gauging the impact of living with a health problems from the measured onset of illness to disease outcome by financial cost, morbidity, mortality, and other indicators (WHO 2017:1).

2.3.1 Diabetes mellitus and quality of life

According to the WHO, as cited in Lavdaniti and Tsitsis (2015:6), quality of life refers to the contextual perception of one's physical and psychological state that reflects on the

standard of health, comfort, happiness, and experiences of an individual or group. The rapidly growing prevalence and chronic complications of diabetes type 2 has the potential to affect national workforce productivity. The reason for this is that the disease is affecting young adults aged between 40 and 60 years. These adults are predominantly the household breadwinners and the labour force. This threatens the living conditions of many families, and result in poverty for individuals, **families** (Mutiyambizi et al 2018:2; Tesfaye et al 2015:2). Chronic complications, which increase with age, pose threats to economic growth and sustenance of national economy (Tefaye et al 2015:2).

Families in sub-Saharan Africa experience a reduction in life expectancy probably due to high morbidity rates of affected breadwinners. These people could not work due to effects of diabetes, or they died prematurely. At times, family members give up work to care for a family member suffering from diabetes mellitus (Mutiyambizi et al 2018:2). Health is vital to economic development, and research shows that improving people's life expectancy by one year is associated with a 4% improvement in the gross national product. Health is a product and an essential precursor of economic growth and investment (Rezaelpandari & Lotfi 2015:33). Diabetes accounts for 2.5-15 % of the annual national budget allocated to health service systems in sub-Saharan Africa. It is considered a costly disease and has unique financial constraints on affected individuals, employers, and national economies (Gebremedhin et al 2014:164; Mutiyambizi et al 2018:2).

The silent nature of the illness gives rise to the hidden cost of managing undiagnosed cases. Experts predict that the trend of type 2 diabetes was likely to continue, and possibly escalate, due to the rising rates of obesity (Carolan, Holman & Ferrari 2014:1011). The pandemic puts pressure on the already over stretched health care systems in Africa, many of which already run on a health care budget deficit (Mutiyambizi et al 2018:2). D'Souza et al (2015:81) state that the incidence of type 2 diabetes is predicted to grow, along with the medical and economic burden of the disease. The growth calls for an urgent need to prevent complications. Dube et al (2014:1) also claimed that most developing countries are facing a significant rise in healthcare expenditure due to the increasing disease prevalence and management of diabetes-related complications. The burden caused by diabetes and the reduction in life expectancy in sub-Saharan Africa hinders the region's economic growth (Dube et al 2014:2).

More than half of Africa's economic growth fell short because of the diabetes burden on the annual budget allocated to health care services (Dehghani-Tafti, Mazloomi-Mahmoodabad, Morowatisharifabad, Afkhami Ardakani, Rezaeipandari & Lotfi 2015:33). However, educating diabetes mellitus patients to manage their illness and adopt healthy lifestyle practices could help prevent the costly complications. To alleviate these costs, the emphasis should be on a patient's self-management (Tesfaye et al 2015:2). The authors also indicated that the cost of managing chronic complications in diabetes mellitus far outweigh the cost of useful primary and secondary prevention. This finding is supported by the health tradition that states that 'prevention is better than cure'. Professional support could empower patients to self-manage and to prevent costly complications. Dube et al (2014:1) reported that in most developing countries, diabetes mellitus consumed 5-30% of the health budget. Rasheed (2013:2) also claimed that health care cost was increasing in billions each year due to the complications of uncontrolled diabetes, and noncompliance.

2.4 PROFESSIONAL SUPPORT FOR SELF-MANAGEMENT

The primary purpose of self-management support is to enhance client compliance and self-efficacy by actively engaging, monitoring, and assisting patients to self-manage. According to Kolaric et al (2014:513), health education is the primary task of healthcare professionals in helping patients to achieve and maintain independence, competence, and self-efficacy in managing their illness. Professionals play a significant role in providing advice, services and support to patients. Their role enables people with diabetes to care for themselves and to receive the maximum benefits of their treatment. Professional support in diabetes is more than merely provision of health information on self-care. There is a need for collaboration, autonomy in decision-making, goal setting and teaching diabetes patients the problem-solving skills to address day-to-day problems (Powers et al 2015:1373).

According to Amente, Belachew, Hailu and Berhanu (2014:1), the primary goal of diabetes support is three-fold to:

- i. enhance the quality of life
- ii. promote good metabolic control
- iii. minimise complications caused by diabetes.

These three aspects empower patients to play an active role in managing their condition. Therefore, health care professionals must adequately educate and re-enforce the patient's self-care skills. According to Nolan and Pal (2013:2), patients who receive no education or support about diabetes were four times more likely to develop complications. Burden (2013:31) argue that diabetic patients would not cope with their condition unless they received assistance from knowledgeable health care professionals. Health care practitioners must deliberately and adequately educate and re-enforce self-care activities (Isara et al 2014:10).

2.4.1 Nurses' role in self-management support

Self-management refers to a way of approaching issues. It represents an ideological shift from patients being passive recipients of care, to being empowered individuals who are active partners in the effective management of their health (Boger, Ellis, Latter, Foster, Kennedy, Jones, Fenerty, Kellar & Demain 2015:2). Nurses play a crucial role in diabetes care due to their proximity to patients. They are on the frontline of diabetes mellitus care and are better placed to provide diabetic patients with the education and support necessary to promote self-management.

The significant role of nurses in diabetes self-care support is to empower patients to become active participants in their care (Burke, Sherr & Lipman 2014:45). Nurses' support helps to enhance effective diabetes mellitus treatment, self-efficacy, and patient satisfaction. There is evidence that nurse practitioners improve clinical outcomes of patients with type 2 diabetes through their ability to initiate change in their self-care behaviour (Richardson, Deroiun, Vorderstrasse, Hipkens & Thompson 2014:135). This study assumes that diabetes self-management determines a patient's ability and readiness to change. Nurses plan and work with individual patients, to meet specific health needs.

2.4.2 Self-management education

According to Powers et al (2015:1372), Self-Management Support (SMS) refers to helping patients become self-regulatory practitioners. Self-management support is a cornerstone of diabetes care (Luan, Yang, He, Huang, Liu & Huang 2017:1172), which

goes beyond information sharing and focuses on activating active patient participation in self-monitoring, decision making and problem-solving. This is achieved by helping them to manage rules, create a supportive social network and be competent. Diabetes Self-Management Education (DSME) empowers patients with the required knowledge and skill to help them to self-manage. Diabetes Self-Management Support (DSMS) is the continual motivation, engagement, reminders, and encouragement required to help patients comply with the required self-care behaviours outside the formal training session (Powers et al 2015:1372).

The type of support can be behavioural, educational, or clinical_ (Haas, Maryniuk, Beck, Cox, Duker, Edwards, Fisher et al 2014:145). DSME and DSMS have shown to be cost-effective by reducing hospital admission or re-admissions as well as the cost related to managing complications. Furthermore, they reduce or delay the onset of diabetes complications, improve quality of life, enhance self-efficacy and increase coping abilities (Power et al 2015:1373). DM self-management must lead to optimal diabetes control by making management choices that will allow patients to achieve success in reaching self-care goals. Furthermore, it must help individual diabetes mellitus patients to perform tasks that will assist them to live with a chronic health condition (Wattanakul 2012:3). Patients are taught how to test and interpret blood glucose results and how to maintain glycaemic control and this improves the quality of life (Gebremedhin et al 2014:165).

Self-management education consists of seven main aspects:

- Self-monitoring of blood sugar at home
- Compliance with DM dietary modifications
- Self-administration of diabetes medications
- Risk reduction behaviours
- Problem-solving
- Coping skills
- Being active (regular exercise) (Shrivastava, Shrivastava & Ramasamy 2013:14)

Mufunda et al (2016:78) indicate that the failure to participate in self-care is attributed to limited patient knowledge and skills. The authors further claim that numerous studies conclude that patients with diabetes frequently show poor self-care behaviours.

2.5 PATIENTS' PERCEPTIONS OF CARE

Patients' perceptions are extremely relevant to practice, especially, for nurses involved in the management of type 2 diabetes mellitus patients (Albargawi, Snethen, Gannass & Kelber 2016:40). According to Farman, Kousar, Hassain, Wagas and Gillani (2017:517), perceptions refer to the basis of understanding what a person perceives, understands and remember. Perception act as critical predictors of self-management behaviours and prompt care-seeking behaviours (Rutebemberwa, Katureebe, Gitta, Mwaka & Atuyambe 2013:1). Research has shown that patients who perceived themselves as empowered to self-manage their condition, are more likely to adhere to treatment regimens. Therefore, health care providers need to evaluate patients' perceptions, to make realistic, individualised, and specific recommendations for self-care activities (Shrivastava et al 2013:16; Hayashino & Ishii 2015:111; Fort, Alvarado-Molina, Pena, Montano, Murrillo & Martinez 2013:131). Hayashino and Ishi (2015:111, 118) identified a relationship between patients' perception of health care, improvement in self-care activities, and better engagement in self-care activities. In addition, they indicated that it was essential for health care professionals to provide care that patients could perceive as positive.

Rutebemberwa et al (2013:1) claimed that patients' perceptions of how adequate or inadequate professional support was, could assist health workers in designing appropriate communication care strategies or approaches. However, D'Souza et al (2015:81) argue that even though patients' perception was a golden rule of their satisfaction with the quality of care provided, it was still a debatable reality. It is imperative to examine patients' perceptions to develop patient congruent health care approaches.

2.5.1 Adherence to health promotion

Perez, Alvarez, Dilla, Guillen and Beltran (2013:175) define adherence as the extent to which a person's behaviour conforms to instructions from healthcare providers. Unlike compliance that depicts a person as a mere follower of instructions, adherence portrays a person as an independent, intelligent, and autonomous individual who is empowered. Patients require adequate knowledge and skill to self-manage their condition since they are ultimately responsible for self-management and prevention of complications (Jansiraninatarajan 2013:29). Type 2 diabetes mellitus patients are responsible for most

of their diabetes care activities. Self-care enables them to become responsible, successful self-managers of their chronic condition thereby, enhancing their quality of life (Arkeberg & Forsgren 2016:7; Luan et al 2017:1173).

2.5.1.1 Relationship between self-care management and self-efficacy

Berhe, Kahsay and Gebru (2013:211) indicate that successful, long-term maintenance therapy for DM largely depends on patients' adherence to self-management practices and their self-efficacy levels. Ishak, Yusoff, Rahman and Kadir (2017:505) identified the following key determinants for self-care involvement in diabetes mellitus patients: Demographic factors, degree of symptoms, duration of the disease, age of patient, perception of severity, patients' satisfaction with health care, patients' provider relationship, gender, perceived competence, and health beliefs. Based on these findings, this study assumes that when patients demonstrate self-efficacy, they will be better placed to self-manage.

Shrivastava et al (2013:16) also assert that there are multiple factors such as social economic and social support that are considered as positive contributors in facilitating self-care activities in diabetes mellitus. The authors further claim that patients' participation in care tend to show drastic impact on progression or development of the disease. However, they acknowledge the significance of clinicians in promoting self-efficacy.

2.6 BARRIERS TO SELF-CARE MANAGEMENT IN DIABETES MELLITUS

Diabetes patients tend to have difficulties in performing most self-care tasks due to varied reasons identified in the previous sections. In a study on influences on diabetic patients' self-care engagement, Bower, Blakeman, Kennedy, Protheroe, Richardson, Rogers and Sanders (2009:3) cite lack of information and support from professional staff as the key barriers. They further report that the nature of the nurse-patient relationship and the degree of patients' participation in care, are crucial facilitators of behavioural change in self-care. This section will only present key factors identified in literature as related to self-management.

2.6.1 Inadequate education

As alluded to earlier, patients who receive information less frequently are less likely to adopt appropriate self-care behaviours (Ayele, Tesfa, Abeb, Tilhun & Girma 2012:1). However, Isara et al (2014:11) claim that many patients lack knowledge of diabetes and its management, especially self-care practices, i.e. weight control, appropriate diet, and blood sugar monitoring and risk control. Dube et al (2014:1, 2) state that although education is a critical factor in the care of patients with diabetes, its implementation in developing countries is not well documented and that poses a challenging task. The authors further claim that developing countries are unprepared for DSME. The health care system is designed to manage acute conditions, and less prepared to handle chronic conditions like diabetes. This is despite the growing body of knowledge and literature that demonstrates the positive effects of DSME. Inadequate education would therefore, influence some of the patient related factors discussed below.

2.6.2 Patient-related factors

According to Fort et al (2013:131), patient's perceptions of diseases and effective communication between patients and healthcare workers, play an essential role in the promotion of lifestyle changes and chronic disease management. Raaijmakers et al (2013:114) identified lack of knowledge and motivation to change, with low adherence, as patient-related barriers to self-management. Apart from knowledge, critical barriers to self-care are physical skills, emotional aspects, and patients' self-efficacy. According to Jansiraniatarajan (2013:30), patients adhere well when the treatment regimen makes sense to them, when it seems useful and when they believe the benefits exceed the costs. Shrivastava et al (2013:16) claim that social demographics, culture, inadequate access to drugs, high cost, patients' satisfaction with medical care, patients' provider relationship, the degree of symptoms and staffing shortage, are significant barriers to self-care compliance.

A study in Addis Ababa showed that diabetes self-care was below the acceptable standards. Only 5% were able to do SMBG at home, and only 21% had access to self-blood glucose monitoring (Gebremedhin et al 2014:165). In addition, D'Souza et al (2015:87) report that studies have shown that a greater sense of empowerment for active participation in self-management and self-efficacy is an antecedent to motivate self-care.

2.7 CONCLUSION

This chapter provided an overview of literature on the importance of self-management, nurses' role, patients' perception of care. The chapter also highlighted a brief overview of key factors related to self-management. Chapter 3 discusses the research design and method used in this study.

CHAPTER 3

RESEARCH METHODOLOGY

3.1 INTRODUCTION

The research methodology provides the scope of how investigations were carried out and specifies the type of information or data collected, the rationale for selecting the design and methods used in the study (Brink et al 2012:199). This chapter includes the setting, research method used, the study population, sampling method, sample size and the instrument used to collect the data. The chapter further gives an overview of the approaches used to manage data and to ensure the reliability and validity of the research instrument.

3.2 RESEARCH DESIGN

A research design serves as a study blueprint and mapping strategy for collecting, measuring, and analysing data. It reflects a set of decisions taken regarding the phenomenon studied (Babbie 2013:120; Kumar 2011:42). A good research design provides structure to an investigation, minimises expenditure by providing a solid base. It facilitates the smooth working of many research operations and helps yield maximum information in a cost-effective and informative way (Kumar 2011:42).

A non-experimental, descriptive, correlational, quantitative design was used in this study to examine and describe Type 2 diabetes mellitus patient's perceptions of nurse's support for self-management in Botswana. The aim was to improve clients' skills in self-management and to strengthen diabetes healthcare management.

3.2.1 Quantitative approach

According to Brink et al (2012:97), a quantitative approach refers to an investigation approach whose aim is to quantify data, generalise results, examine the causal effect and make predictions due to its precision, rigour and a broader spectrum of the subject under study. It refers to a structured approach that attempts to maximise objectivity, replicability, the generalisability of findings, verification of results statistically, examination of the relationships between variables, and interest in the prediction of phenomena (Creswell 2014:32). This approach was appropriate for this study as it sought to quantify the relationship between diabetic patients' perceptions of professional support and their self-management activities. Quantitative researchers hold the position that 'truth' is absolute and that careful measurement can define a single reality. This study focused on objectivity and precision by using a structured Likert scale to determine the truths (Kumar 2011:32). The use of statistics in quantitative research helps to quantify the magnitude of an association or relationships between variables. It also helps to isolate the effect of different variables (Babbie 2013:188).

A quantitative approach was utilised in this study since it also uses deductive, yet convergent reasoning, which enhances the accuracy of results, generalisation, and predictions. Apart from enhancing generalisation of results, it also promotes research replicability (Babbie 2013:188). The processes followed in this study were highly

structured. There was strict control from the sampling techniques, through to ensuring the validity and reliability of the instrument and statistical analysis. This research aimed to generate principles and propositions that describe and predict perceptions and self-care activities (Kisankath, Ilankoon, Arulanandem & Sundaresan, Goonewardena & Joseph 2018:1).

This empirical investigation helped to determine the extent to which patients' perceptions of nurses' self-management support impacts their self-management behaviours by confirming, or quantifying the variables (Kumar 2011:32).

3.2.2 Non-experimental design

In this study, the researcher used non-experimental, descriptive and correlational research. In this study, there were no interventions or manipulation introduced as the purpose was to examine and describe any existing relationship between diabetic patients' perceptions of nurses' self-management support, and their self-management behaviours. Therefore, this design was appropriate (Polit & Beck 2012:55).

The natural setting, non-intervention was best suited for providing mathematical descriptions of trends, behaviours, and opinions of the patients (Creswell 2014:13), inherent in the purpose of this study. According to (Brink et al 2012:112), non-experimental approaches are very useful in acquiring more information and knowledge, which is difficult, unethical, or even impossible to employ in an experimental approach. In this study, there was no intervention and manipulation, only the description of patients' perceptions and their self-management behaviour.

3.2.3 Descriptive design

A descriptive survey study design provides accurate, detailed and a complete description of the context and participants in a study by asking questions about the nature, incidence, and distribution of variables without manipulating the environment (Ary et al 2014:675; Creswell 2014:280). Descriptive research outcomes include discovering and describing concepts, identifying possible relationships among concepts, and developing hypotheses that provide a basis for future research (Grove, Burns & Gray 2013:26). The design was appropriate for this study, as the researcher was able to gain the necessary information

and discover new meanings in relation to the frequency of patients' perceptions and their self-care management practices.

The design describes what exists among the diabetic patients in terms of their views and opinions about the nurses' support, determines the frequency of their perceptions of this support and categorizes the information to describe explain the relationships between the perceptions and self-care (Polit & Beck 2012:159). Other variables such as age, gender, diabetes duration and treatment were also measured. The researcher attempted to obtain first-hand information from the patients, there was no intention to change their behaviour.

3.2.4 Correlational research

Correlational research is a form of non-experimental research in which investigators use correlational statistics to describe, measure, discover or establish the existence of a relationship, associations, or interdependence between two or more variables without determining the causal effect (Creswell 2014:41; Kumar 2011:30). This study adopted a correlational approach to determine whether a relationship exists between diabetic patients' perceived nurses' support and their self-management behaviours. The aim was not to establish cause and effect (Tappen 2016:83).

This design was appropriate for this study as it intended to provide a quantitative and numerical description of current trends in self -management, attitudes, or opinions about professional support (Creswell 2014:41) and examine how diabetic patients' perceptions of nurses' support impacts their self- management practices.

3.2.5 Study setting

Study setting refers to the place where the researcher collects data (Topp 2013:14). This study was carried out at the Donga Diabetes Clinic of Excellence, an extension of Nyangabgwe Hospital. The clinic is situated in the city of Francistown and caters for comprehensive needs of diabetic patients referred from the greater Francistown clinics, clinics in surrounding villages, district, and primary hospitals within its catchment area.

The clinic was chosen for its specialised services for diabetic patients, the accessibility of population under study and the large catchment area.

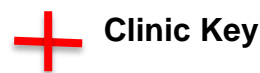
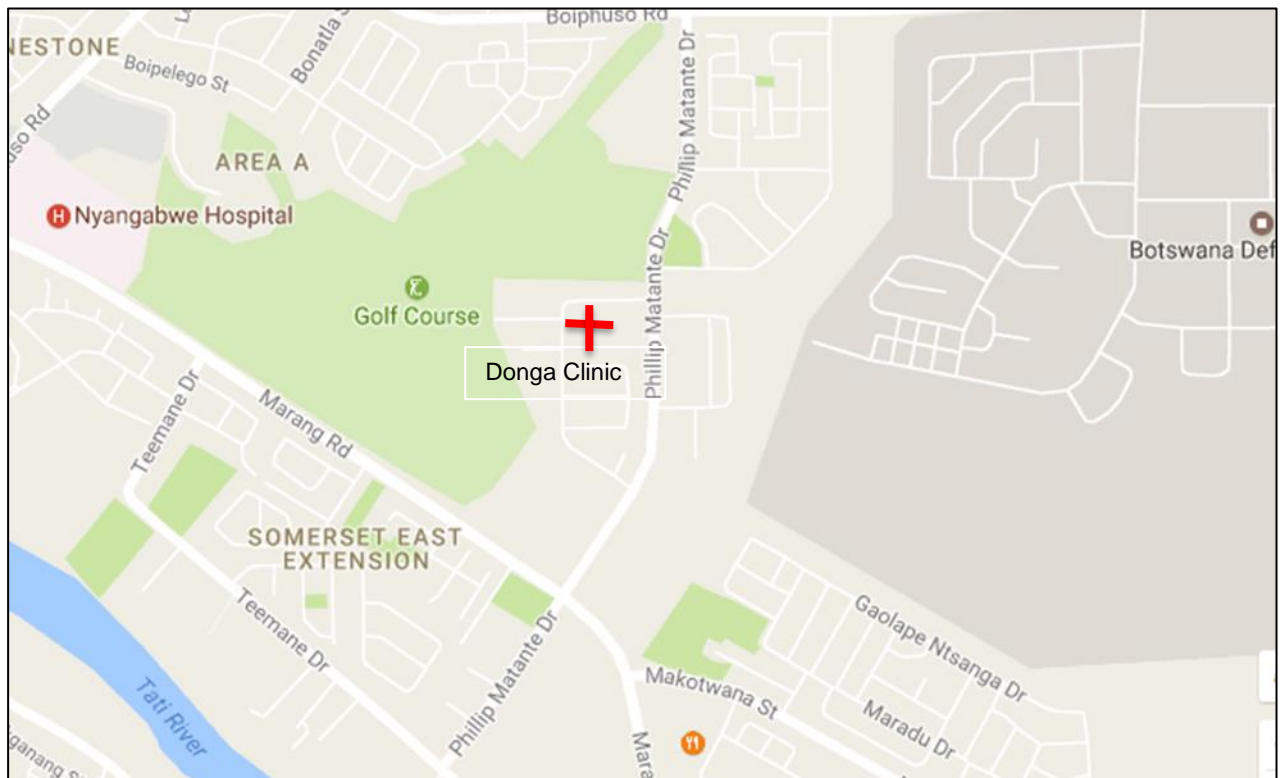


Figure 3.1 Donga Diabetic Clinic of Excellence (DDCE)
(Botswana Roadmap)

3.3 RESEARCH METHODS

The research method describes how the investigation was carried out such as, what the researcher did to solve the research problem or to answer the research question. The research method used in this study followed a quantitative approach. It includes population and its characteristics, sampling and sample size, data collection technique, data processing and data analysis. Strategies to enhance methodological and scientific integrity are also included (Brink et al 2012:199).

3.3.1 Population

According to Brink et al (2012:131), a population refers to an entire group of persons or object that is of interest to the researcher or that meets the criteria that the researcher is interested in studying. The population of this study comprised of patients diagnosed with

type 2 diabetes mellitus, having one or more comorbidities and registered at the Donga Diabetes Clinic of Excellence for follow-up care. The assumption was that these patients had received adequate professional support to influence their self-management behaviour. The target population was 2 244 patients.

Inclusion criteria

- Patient diagnosed with type 2 diabetes mellitus attending Donga clinic.
- Type 2 diabetic patients aged 18 years and above and registered for follow-up care
- Patients diagnosed with type 2 diabetes mellitus with one or more comorbidities.

Exclusion criteria

- Diabetes patients below 18 years.
- Type 2 diabetic patients who are 18 years and above but without comorbidities.
- Diabetes type 2 patients who were not mentally fit, weak, or looking too ill.

The study criteria were developed for the following reasons:

- Accessibility of type 2 diabetic patients.
- Patients from 18 years and above are believed to have developed self-management skills and cognitive capability to recognise, solve, and make informed decisions.
- Patients with one or more co-morbidities could share more insights into self-management practices.

3.3.2 Sampling

Sampling refers to the process of selecting a predetermined subset from an entire population to learn about a given population (Maree 2016:192). A non-probability sampling procedure was used in this quantitative research, to ensure that participants who met the criteria were included in the study. This type of sampling promotes selection of a representative sample (Polit & Beck 2012:284). convenience sampling was used to select a study sample. Selecting type 2 diabetic patients within their natural study setting

promoted better inferences for the population. According to Botma (2010: 129), non-probability sampling is acceptable in quantitative and considered to be the most practical and feasible method, despite the fact that it is neither preferred in quantitative research.

The participants were selected from a list of type 2 diabetic patients scheduled for monthly follow-up visits. Attempts were made to ensure a representative sample. A big sample was recruited to meet requirements for statistical analysis

3.3.2.1 Sample

A sample is a subset of the entire population. A representative sample has critical characteristics or closely approximates the characteristics of the study population (Polit & Beck 2012:275). The authors further claimed that the larger the sample, the more representative of the population and smaller the sampling error would be (Polit & Beck 2012:284). The sample size was calculated using computer software known as Raosoft sample size calculator. The sample size was calculated using an online Raosoft (2016) sample size calculator, using the margin error of $\pm 5\%$, 95% confidence level, with 50% distribution. The target population was $N=2244$. The calculation yielded a sample of 329. However, the final sample was 354 patients.

3.3.3 Data collection approach and method

Data collection refers to the process of gathering information from a sample to address the research problem or answer research questions. Quantitative methods require data collection to be structured and pre-determined (Brink et al 2012:14). Data was collected using a self-designed, interviewer-administered, structured questionnaire (Annexure D). This involved face-to-face interviews with participants who were unable to read and write. A face-to-face interview (personal interview) refers to a data collection strategy where the interviewer reads questions to respondents and record their answers (Kumar 2011:137; Brink et al 2012:157). This approach was chosen for its greater response rate since it gave the interviewer an opportunity to clarify the misconceptions, allowed for the participation of illiterate people and ensured a higher completeness rate (Ellis 2013:100; Maree 2016:9). Subjects who were able to read and write had an opportunity to self-complete the questionnaire.

3.3.3.1 Data collection instrument

A questionnaire was designed based on the study objectives, research questions and purpose. The diabetes mellitus seven essential self-care behaviour-teaching topics were used as a reference for eliciting patients' perception of the support provided by the health professionals (Shrivastava et al 2013:15). The questionnaire contained closed-ended questions that consisted of statements that needed a rating on the 5-point Likert scale. The questionnaire solicited measurable dimensions of the teaching topics and self-management practices. The questions were structured so that all the participants answered the same questions. A structured questionnaire was chosen as the most appropriate data collection tool for this study because it allows for the easy collection, better coding, and analysis of data (Brink et al 2012:156).

Composition of the questionnaire

Section 1: Demographic data.

This section contained six questions that elicited demographic data on gender, age, marital status, level of education, and diabetes history of patients, for example, how long a patient had had diabetes, and type of medication a patient was taking.

Section 2: Perception of nurse's self-management support

This section contained questions meant to elicit information on study participant's perception of nurses' support for self-management, questions focused on self-management key areas like preparation and planning of meals, physical activity (being active), risk control, self-monitoring and how satisfied they were with nurses' motivational behaviour.

Section 3: Patients self-management practices

This section focused on how often diabetic patients carried out self-management or self-care activities. Questions were related to patients' compliance with self-care teachings like physical activity, drug therapy, risk factor control, foot care and self-monitoring.

3.3.3.2 Data collection process

The English questionnaire was translated into Setswana and Kalanga to accommodate the non-English-speaking participants in the study. The questionnaire was translated by a Motswana lecturer at the Institute of Health Sciences who is Kalanga by tribe, with a master's degree qualification. He was also a member of the research committee. A Setswana teacher validated the translation (also a Kalanga by tribe).

The English, Setswana and Kalanga questionnaires were submitted to the Ministry of Health Research Unit for the final validation. The researcher paid attention to the questionnaire statement wording for simplicity and clarity of questions. To maintain content and face validity, the Ministry of Health Research Unit and the Nyangabgwe Hospital Research Review Boards reviewed the questionnaires. Nyangabgwe Hospital Research Review Board and management were involved because the Donga Diabetes Clinic of Excellence is an extension of the hospital.

Subjects were recruited for data collection as follows:

1. The principal investigator met potential participants during their routine clinic visits with the help of clinic staff.
2. The principal investigator discussed the purpose of the study, study inclusion and exclusion criteria, significance of the study, research protocols and result management with potential participants in one session with the help of an interpreter.

Potential participants who met the criteria and showed a willingness to participate in the study were directed to the allocated room, while the rest of the participants remained in the doctors' queue.

The principal investigator trained research assistants to read the information form and obtain informed consent from the participants before data collection. Data was collected in the allocated rooms, which ensured privacy and enhanced participant's freedom to speak. Care was taken not to delay the study participants from their doctor's appointment.

3.4 ETHICAL CONSIDERATIONS

Ethics in research is about maximising benefits while minimising harm to study respondents. To achieve this, the researcher must ensure that the client's human rights are protected by adhering to research procedures, legal, social, and professional obligations (Polit & Beck 2012:727).

The goal of observing ethical considerations is to ensure that a study has scientific value and credibility. Ethical clearance and permission to conduct the study were obtained from the University of South Africa, Department of Health Studies Research Ethics Committee (Annexure E), the Research Unit of the Ministry of Health in Botswana, the Nyangabgwe Hospital Research Ethics Committee (Annexure B). Data collection commenced after permission was granted.

3.4.1 Confidentiality, anonymity, and privacy

Participants were guaranteed confidentiality and privacy. Strict control measures were put in place to prevent unauthorised access to patient information. Data collection was conducted in private rooms and questionnaires were kept in a lock-up cupboard using a secret codes. The electronic data was protected through a password. Coding systems was used instead of actual names to ensure anonymity. Confidentiality was maintained throughout all research stages. These measures ensured anonymity and confidentiality (Brink et al 2012:36-38).

3.4.2 Beneficence/freedom from harm

According to Babbie (2013:34), beneficence ensures that subjects will benefit, instead of harmed by the research process. Brink et al (2012:35, 36) claim that participants can be protected from physical, psychological, emotional, social, spiritual, economic, legal discomfort or harm, by strictly adhering to the principle of beneficence.

In this study, the safety of participants was achieved by ensuring that participants had eaten a meal, took their medication and were not in distress. The participants were protected from physical and emotional distress. This included avoiding deception and

assuring participants anonymity, and the promise to keep information private (Babbie 2013:32; Brink et al 2012:36).

3.4.3 Autonomy/right to self determination

Autonomy is the participant's freedom to participate in a study without force or influence (Brink et al 2012:40). Participants were not coerced to participate in the study, they were informed of their right to decide to participate in the study and that they could ask for clarification. Participants were informed that they had the freedom to withdraw from the study at any time without penalty, before they signed the consent form. The consent form was proof of their willingness to participate in the study (Annexure C).

3.4.4 Justice

The researcher strictly adhered to the study inclusion criteria during the selection of study participants. The researcher ensured privacy, patients' safety, confidentiality, equal treatment of participants prior, during and after the interview session. Furthermore, the researcher avoided weak or ill-looking participants. To enhance fairness, patients were informed of the nature, purpose of the study and the rationale for eliciting patients' perception of professional support.

3.4.5 Informed consent

Informed consent is an ethical principle that ensures justice and protection from harm by providing participants adequate information on the the study intention, the data collection processes, procedures to be followed, anticipated risks and benefits of the study investigation, procedures to be followed, as well as possible risks and benefits (Brink et al 2012:38) (Annexure C).

The explanation was given in the local languages (Setswana and Kalanga). The purpose of giving detailed information to participants was to enable them to make an informed decision with regards to their involvement in the study. Participants signed the consent form as proof of their willingness to participate in the study.

3.4.6 Quality of data

The research assistants received training on personal presentation, interpretative and interviewing skills. The training was provided to enhance the quality of data collection. Only research assistants that were familiar with the research process, English, Kalanga, and Setswana were engaged in interviewing participants. Research assistants were also familiarised on all ethical considerations for this study, that is, confidentiality and privacy.

3.5 DATA MANAGEMENT AND ANALYSIS

Data analysis aims to categorise, order, manipulate and summarise the data. It involves studying organised or tabulated material from many angles to discover inherent facts and to make meaning from presented data (Brink et al 2012:177). Since this study used the quantitative approach, statistical methods were applied to analyse the data. A data management plan was developed and it included five phases (Creswell 2014:163):

- Preparation for data entry
- Data entry
- Data checking
- Data analysis
- Data Interpretation

Data management started with the translation of data from Setswana/Kalanga back to English. The same person who translated the document initially did the translation. The Ministry of Health Research Unit and the Nyangabgwe Hospital Research Review Boards validated accuracy.

Table shells for analysis were developed before entering data to facilitate data entry. Data screening was carried out to ensure that questionnaire response was legible, understandable, complete and that the responses were within acceptable ranges. The services of a statistician were obtained during data analysis. SPSS statistical software Version 25 for Windows software was used to process, analyse, and present data numerically.

Descriptive statistics was applicable in this study, as it allowed the researcher to organise and summarise data in a numerical form, to give meaning (Brink et al 2012:178). Spearman's rho was used to determine if a statistical relationship exists between patients' perceptions of professional support and their self-care activities. Each variable on patients' perceptions was correlated to the corresponding self-care-activity. The statistician verified the calculations. Details are provided in Chapter 4.

3.6 VALIDITY AND RELIABILITY OF THE STUDY

In quantitative research, validity and reliability are very important. The researcher needs to consider both these concepts when developing a research instrument (Brink et al 2012:171).

3.6.1 Validity of the study

Validity, according to Brink et al (2012:170), is the ability of an instrument to measure accurately what it is supposed to measure. Yasar and Cogenli (2013:505) extend this definition to include the possibility of making inferences based on data. The researcher used literature review to develop the instrument to enhance the content validity of the questionnaire (Maree 2016:147). Content validity refers to the extent to which an instrument represents the factors under study. To achieve content validity, the questionnaire included a variety of questions on diabetes patients' self-care activities and perception of professional support. Consistency in the personal interview process further achieved content validity. Face and Content validity was achieved by allowing experts to judge the relevance and by ensuring appropriateness of items (Ary et al 2014:253).

External validity is defined as the degree to which the findings of the study can be generalised to settings other than the study design and setting (Brink et al 2012:127). The researcher ensured the recruitment of adequate sample size (354), beyond what the calculation yielded.

3.6.2 Reliability of the study

Reliability is the ability of a research instrument to provide similar results when repeatedly used under similar conditions. It indicates accuracy, stability, and predictability of research. The higher the accuracy of an instrument, the higher its reliability (Kumar 2011:345). Data collector bias was minimised by training research assistants to standardise conditions of data collection (Maree 2016:41; Kumar 2011:345).

The researcher conducted a pilot on 15 diabetic patients in three council clinics in Francistown. They met the criteria but did not form part of the final sample (Brink et al 2012:169). After data analysis of pilot study data, the researcher corrected the numbering of questions, as well as grammatical errors. This pilot study was carried out to validate and ascertain the effectiveness of the study instrument, and to determine whether the instrument questions would elicit the right information that would answer the primary research questions.

3.7 CONCLUSION

This chapter presented the research design and the methods followed in this study. Literature was used to justify the selection of techniques and approaches. The chapter included measures taken to ensure adherence to ethical considerations and validity and reliability of the instrument. Chapter 4 presents the details of the study findings.

CHAPTER 4

DATA ANALYSIS, PRESENTATION AND DESCRIPTION OF THE RESEARCH FINDINGS

4.1 INTRODUCTION

This chapter presents the results of the study from the type 2 diabetic patients on their perceptions of nurses' support and their self-care practices. Numerical data is summarised and presented in an interpretable format (Kaushik & Mathur 2014:1188). The aim is to answer the research questions and to draw conclusions. The first section of the chapter presents the research results regarding biographical information. The information includes gender, age distribution, and patient's diabetes history. The second section outlines the patient's perception of professional help for self-care support. The outline includes the preparation and planning of meals, risk factor control, drug therapy, being active, foot care and diabetes self-monitoring. The third section presents information regarding the patient's perception of nurses' motivations for self-care behaviours. The final part describes how diabetic patients carried out related self-care management activities including the relationship between their perceptions and self-management practices. The chapter includes brief supportive literature.

4.2 RESEARCH RESULTS

Three hundred and fifty-four (354) patients participated in the study. The results are presented in the subsequent sections.

4.2.1 Biographic information

The biographic section focused on gender distribution, age distribution, marital status, and highest educational level, duration of type 2 DM and type of medication prescribed.

4.2.1.1 *Socio-demographic characteristics*

Table 4.1 Socio-demographics

Variable	Variable	Count	Percentage
Gender	Male	98	27.7
	Female	256	72.3
Age in years	18-27	11	3.1
	28-37	15	4.2
	38-47	24	6.8
	48-57	99	28.0
	58 and above	205	57.9
Marital status	Single	135	38.1
	Married	149	42.1
	Divorced	32	9.0
	Widowed	33	9.3
	Separated	4	1.1
	Cohabiting	1	0.3
Education	Never studied	40	11.3
	Non-formal	38	10.7
	Primary	170	48.0
	Secondary	66	18.6
	Tertiary	40	11.3
How long with diabetes		Count	Percentage
0-3 months		13	3.7
4-6 months		6	1.7
7-9 months		10	2.8
10-12 months		19	5.4
More than a year		306	86.4
Total		354	100.0
Medication		Count	Percentage
Diabetes pills		249	70.3
Insulin injection		42	11.9
Both pills and injection		63	17.8
Total		354	100.0

- **Gender and age**

Table 4.1 above shows that from the total population, 27.7% (n=98) were males and 72.2% (n=256) were females. Most of the respondents, 57.9% (n=202), reported being aged 58 years and above. Meanwhile, 28% (n=99) of the participants were between ages 48 and 57. A small percentage, 14.1% (n=50) were between ages 18 and 47.

- **Marital status**

Table 4.1 above shows that from a total population, 38.1% (n=135) were single, 42.4% (n=150) were married or cohabitating, with the majority married. The table shows that 19.4 (n=69) were married before but are now single due to divorce, death, and separation.

- **Education**

As indicated in table 4.1, about 11.3% (n=40) never studied, 10.7% (n=38) had no formal education, 66.6% (n=236) had basic education, with majority, 48% (n=170) having primary education. A combined few 30% (n=106), were educated up to secondary and tertiary level.

- **Duration of disease**

A total of 86% (n=306) of the population reported having had diabetes for more than one year. The rest of the population (14%; n=48) have had diabetes for less than a year.

- **Type of medication**

A total of 70.3% (n=249) of the population reported taking diabetes pills, 11.9% (n=42) received insulin injections. While 17.8% (n=63) patients took both pills and injections.

4.2.2 Patients' perceptions of professional support

4.2.2.1 Planning of meals

Following a healthy eating plan, such as eating five or more servings of fruit and vegetables daily and moderating carbohydrate intake, is associated with effective glycaemic levels and improved quality of life (Wattanakul 2012:19). Nutrition in diabetes, is considered a cornerstone of type 2 diabetes lifestyle interventions that plays a significant role in controlling the disease (Inkombele 2014:35).

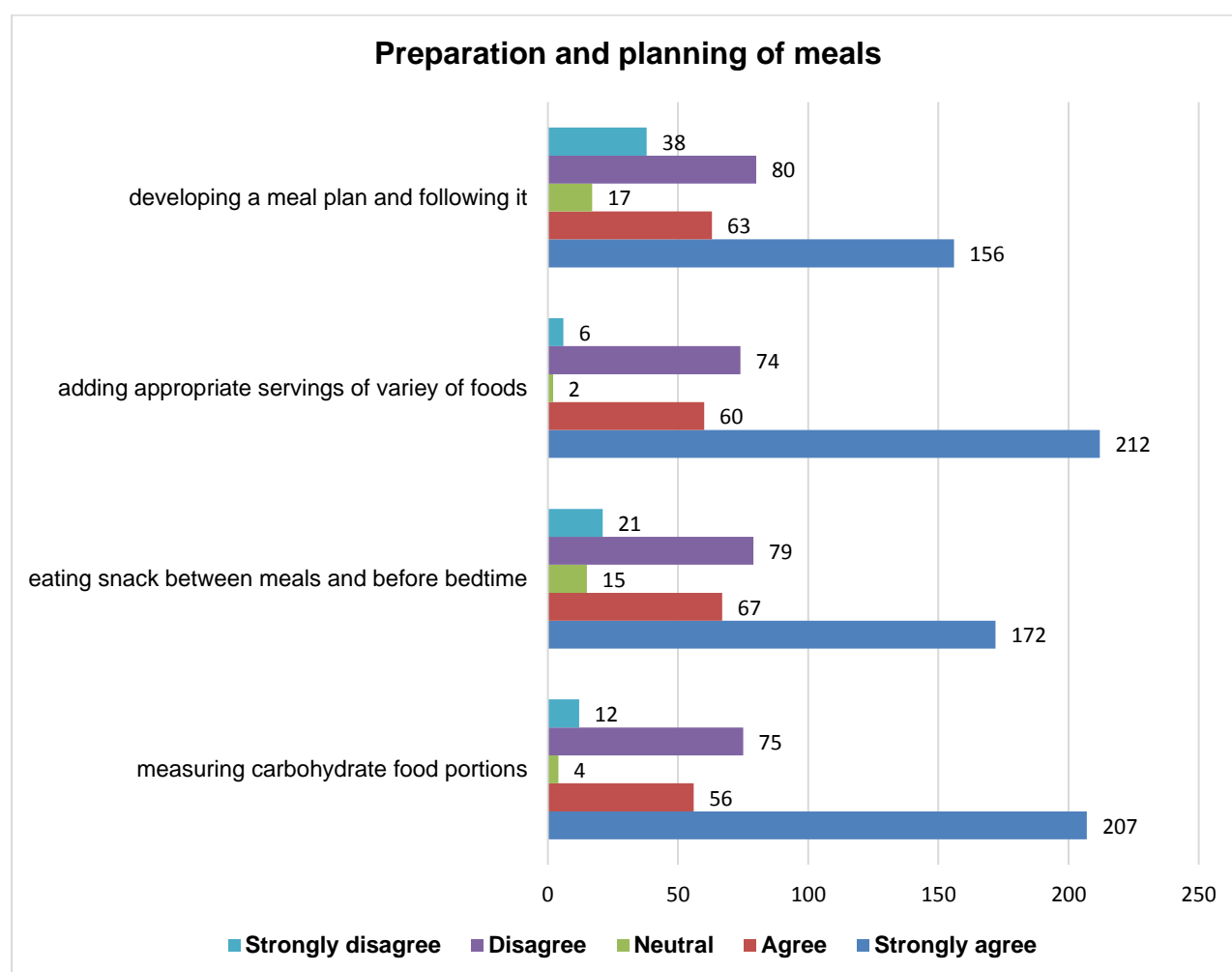


Figure 4.1 Preparation and planning of meals

Concerning nurses support for patients to develop and follow a meal plan, the majority 44.1% (n=156), strongly agreed. While, 17.8% (n=63) agreed. However, an almost equal number of 43.3 % (n=118) either strongly disagreed or disagreed and 4.8% (n=17) were neutral.

More than half of the participants, 59.9% (n=212) strongly agreed and 16.9% (n=60) agreed that the nurses provided adequate support in teaching them about appropriate servings. In total, 20.9% (n=80) disagreed to the statement, and only 0.6% (n=2) were neutral.

Regarding taking a snack between meals, almost half of the participants 48.6% (n=172) strongly agreed. While 18.9% (n=67) agreed to the statement. About 22.3% (n=79) disagreed with the statement, with 5.9% (n=21) strongly disagreed and 4.2% (n=15) neither agreed nor disagreed, they were neutral.

An overwhelming majority of the participants strongly agreed or agreed that the nurses taught them the importance of measuring carbohydrate portions. More than half 58.5% (n=207), strongly agreed, and 15.8% (n=56) agreed to the statement. Approximately 21.2% (n=75) disagreed and 3.4% (n=12) strongly disagreed. A small number, 1.1% (n=4) were neutral.

4.2.2.2 Physical activity, drug therapy and risk control

Regular exercises improves glycaemic control, positively affects diabetic patients' quality of life, helps reduce weight, improve insulin sensitivity and proved to delay onset of complications (Arkeberg & Forsgren 2016:21; Inkombele 2014:28, 30).

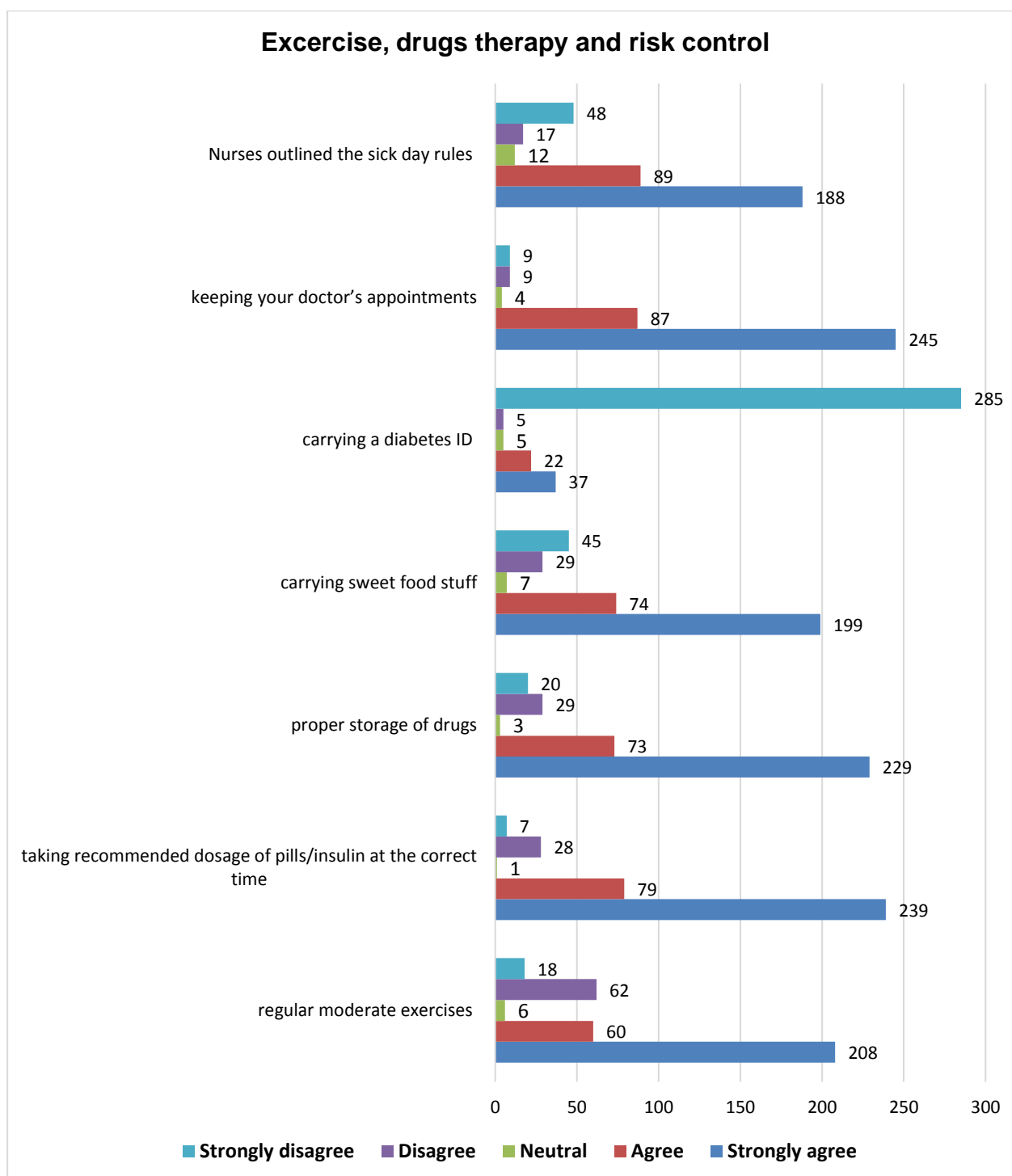


Figure 4.2 Perceptions of support given regarding physical activity, drug therapy and risk control

With regard to strictly keeping doctor appointments, the majority 69.2% (n=245) of the participants strongly agreed, 24.6% (n=87) agreed, 2.5% (n=9) strongly disagreed, 2.5% (n=9) disagreed and 1.1% (n=4) were neutral.

Majority of participants, 80.5% (n=285) strongly disagreed that they were always informed to carry a diabetes ID with the required information. A modest number 10.5% (n=37) strongly agreed, 6.2% (n=22) agreed, 1.4% (n=5) disagreed and 1.4% (n=5) were neutral.

A little over half 56.2% (n=199), strongly agreed that they were always informed to carry sweet foodstuff to reverse effects of the blood glucose. Approximately 20.9% (n=74) agreed, 12.7% (n=45) strongly disagreed, 8.2% (n=29) disagreed and 1.9% (n=7) were neutral.

With reference to proper storage of drugs, the majority 64.7% (n=229) viewed the provided support as adequate. Approximately 20.6% (n=73) agreed, 8.2% (n=29) disagreed, 5.6% (n=20) strongly disagreed and only 0.8% (n=3) were neutral.

Regarding drug therapy, the table shows that 67.5% (n=239) of the participants strongly agreed with the statement of taking the recommended dosage of drugs at the correct time. Approximately 22.3% (n=79) agreed, 17.8% (n=28) disagreed, 2.0% (n=7) strongly disagreed and 0.3% (n=1) was neutral.

The data on support for patients' physical activity indicated that 58.8% (n=208) of the participants strongly agreed that adequate support was given to engage in regular moderate exercises three or more days per week. Approximately 16.9% (n=60) agreed, 17.5% (n=62) disagreed, 5.1% (n=18) strongly disagreed and 1.7% (n=6) were neutral.

4.2.2.3 Footcare

Diabetes self-management education on foot care is the most effective way to improve foot care, reduce the burden of diabetes foot ulcers and possible amputation. Amputations are characterised by the loss of productivity and compromised quality of life (Saurabh, Sarkar, Selvaraj, Kar, Kumar & Roy 2014:106; Muhammad-Itfi, Zaraiyah & Anuar-Ramdhan 2014:106).

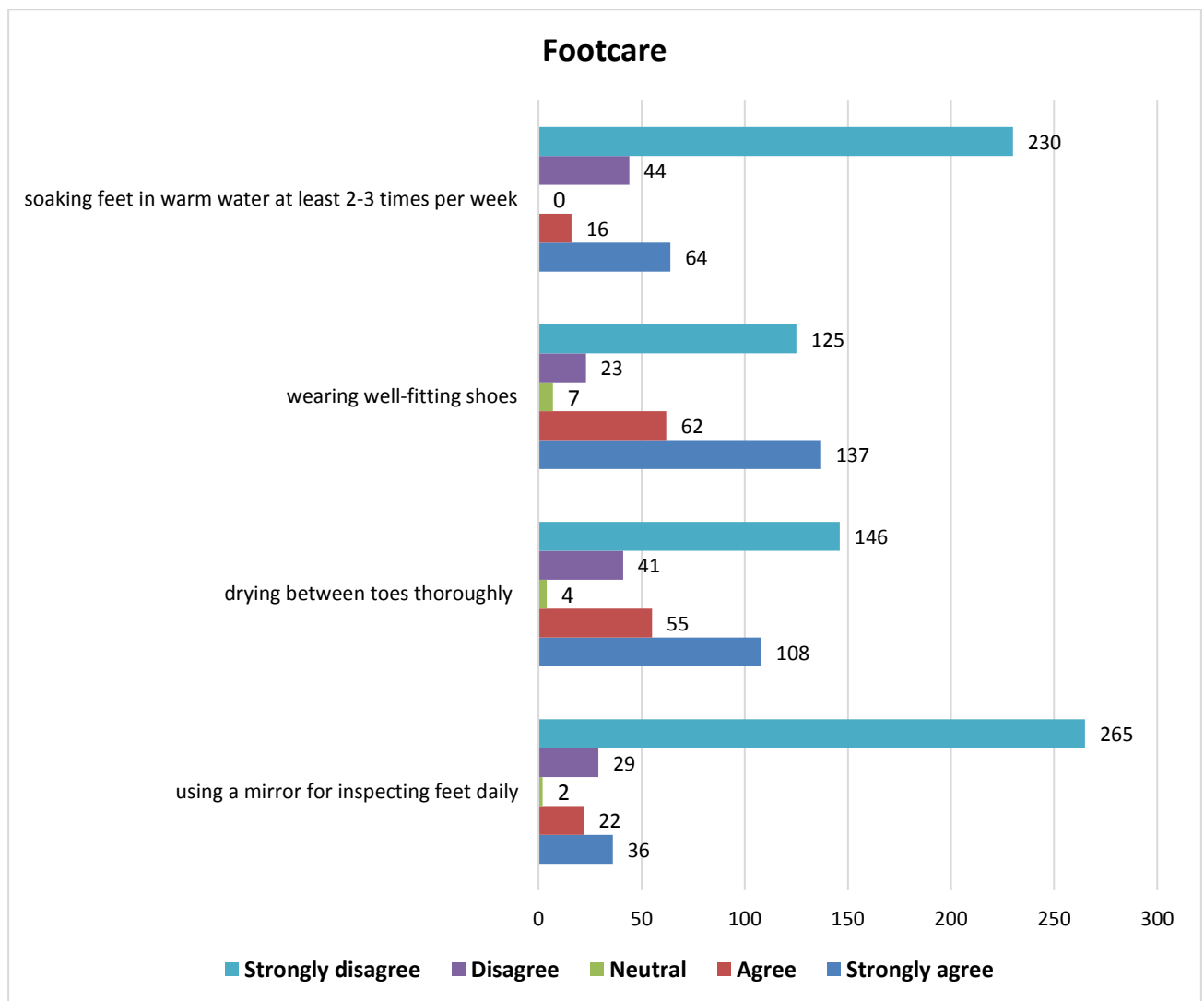


Figure 4.3 Perceptions of diabetic patients regarding teaching on foot care

The findings in Figure 4.3 shows that 65.0% (n=230) of the participants strongly disagreed by the receiving of adequate support regarding soaking feet in warm water at least 2-3 times per week. A combined 22.6% (n=80) were in the affirmative and 12.4% (n=44) disagreed.

Less than half of participants 38.7% (n=137), strongly agreed of being advised to wear well-fitting shoes. A moderate percentage of 17.5% (n=62) agreed, 35.3% (n=125) strongly disagreed, 6.5% (n=23) disagreed and 2.0% (n=7) were neutral.

With regards to teaching patients to dry thoroughly between their toes, a combined result showed that there was a slight difference between those who disagreed 52.8% (n=187) and those who agreed 46% (n=163). Only a few 1.1% (n=4) were neutral.

An overwhelming majority of the participants 74.9% (n=265) strongly disagreed with the statement of receiving advice on how to use a mirror for inspecting feet daily. Approximately 8.2% (n=29) disagreed. 10.2% (n=36) strongly agreed, and 6.2% (n=22) agreed. Only 0.6% (n=2) were neutral.

4.2.2.4 *Perceived support for self-monitoring*

According to Delamater (2006:71), Self-Monitoring of Blood Glucose (SMBG) has been in use for over 25 years. Research has shown that it was associated with improved glycaemic control, despite the low adherence rates.

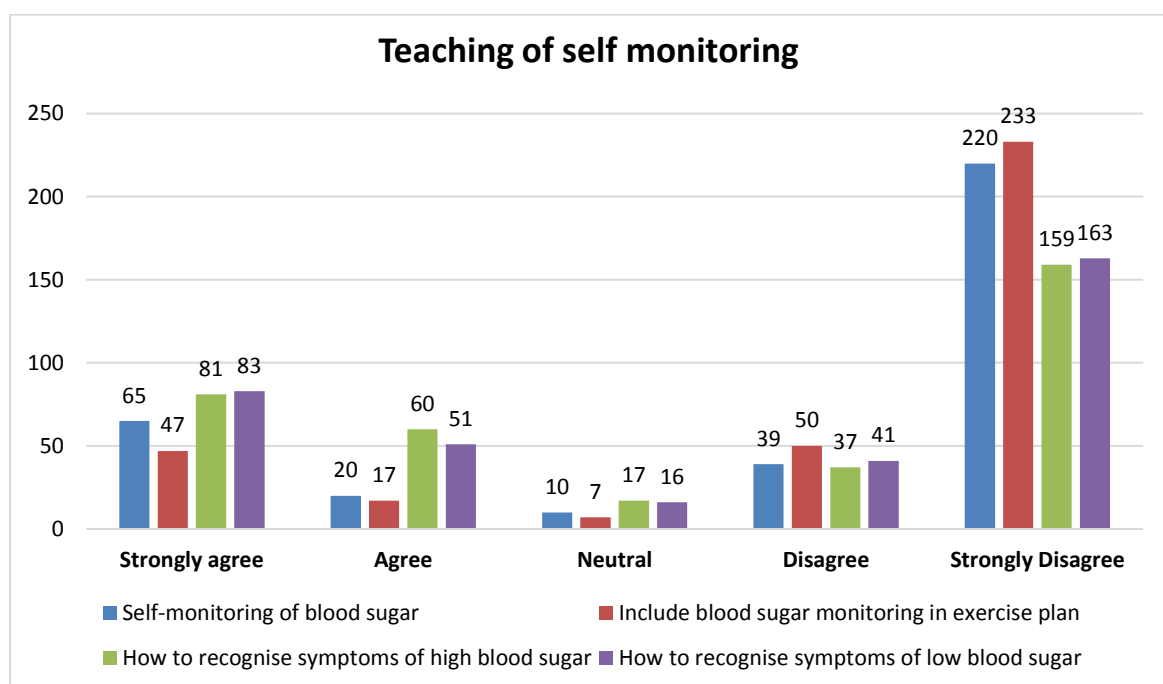


Figure 4.4 Perceptions regarding support to self-monitor

The study also revealed that combined, over half of participants 57.6% (n=204) felt that inadequate teaching or support was received from nurses to recognise symptoms of low blood sugar. Meanwhile, 37.8% (n=134) had a positive response. A small proportion 4.5% (n=16) were neutral. With regard to the teaching on recognition of symptoms of high blood glucose, 55.4% (n=196) disagreed that it was adequate. Meanwhile 39.8% (n=141) agreed. A small proportion, 4.8% (n=17) were neutral.

Concerning the support to include monitoring of blood sugar in and exercise plan, more than half 65.8% (n=233) of the participants strongly disagreed that it was adequate. In

addition to that percentage, 14.1% (n=50) disagreed. A minority 13.3% (n=47), strongly agreed, 4.8% (n=17) agreed and 2.0% (n=7) were neutral.

Most of the participants 62.1% (n=220) strongly disagreed that they received adequate support regarding self-monitoring of blood sugar at least three times per day. Approximately 11.0% (n=39) disagreed, 24% (n=85) strongly agreed or agreed, and 2.8% (n=10) were neutral.

4.2.2.5 *Perceived nurses' motivational behaviour for self- management*

Research has shown that patients who perceive themselves as empowered to self-manage their diabetes, are more likely to adhere to treatment and have better outcomes (Hayashino & Ishii 2015:111-118; Ku & Kegels 2014:14).

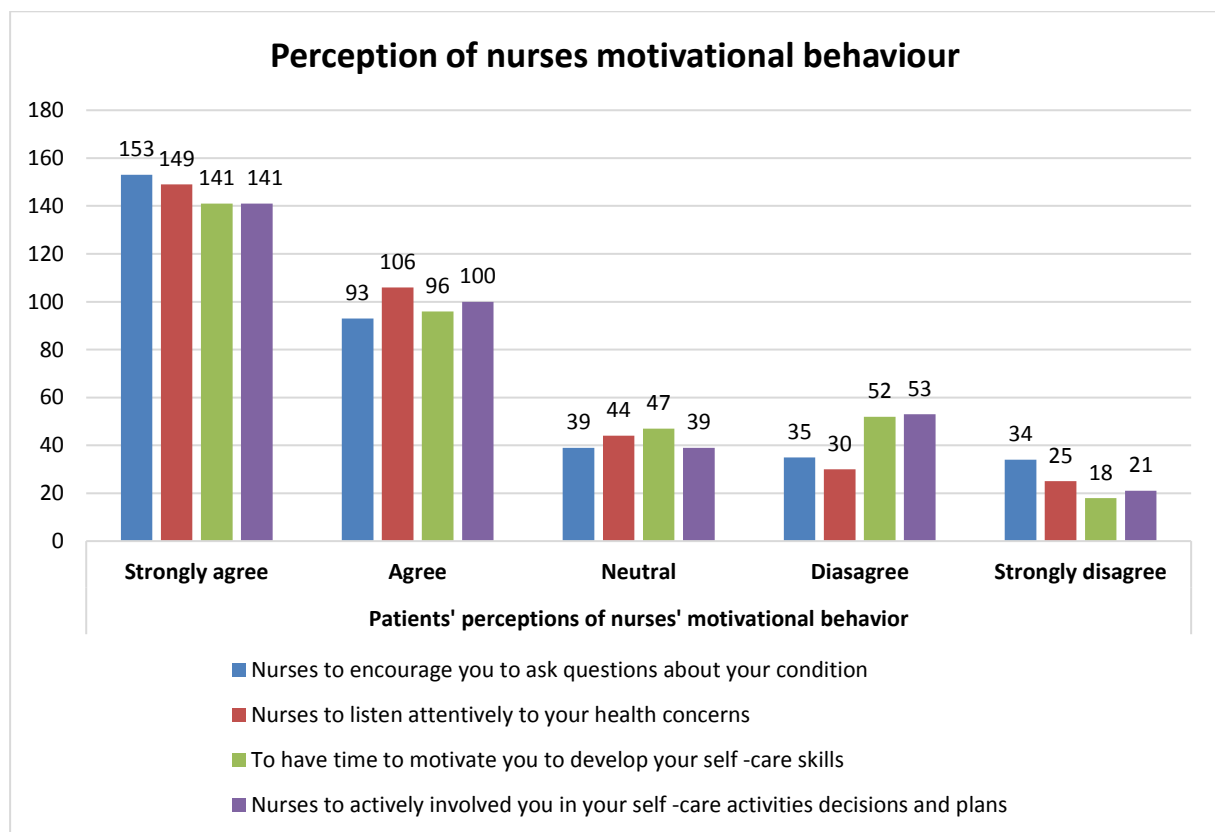


Figure 4.5 Patients' perceptions of nurses' motivational behaviour

Figure 4.5 shows the perceptions of patients regarding expectations for nurses to encourage them to ask questions about their condition. A majority of 43.2% (n=153) of

patients strongly agreed, 26.2% (n=93) agreed and 11.0% (n=39) were neutral. Those who disagreed were 9.8% (n=35) and the remaining 9.6% (n=34) strongly disagreed.

Findings of the statement regarding nurses to listen attentively to patients' health concerns, a combined majority of 72% (n=255) agreed. Meanwhile, 12.4% (n=44) neither agreed nor disagreed. A small proportion 18.1% (n=55) disagreed.

Patients believed that nurses need to take time to motivate patients to develop self-care skills. A combined 66.9% (n=237) agreed, while a minority 9.8% (n=70) disagreed and 13.3% (n=47) were neutral.

Data showed that combined, more than half 68% (n=241) of the participants believed that nurses should actively involve them in self-care decisions and plans. A smaller percentage 20.9% (n=74) disagreed with the statement and a minority 11.0% (n=39) were neutral.

4.3 AVERAGE RESPONSES ON PERCEIVED NURSES' SUPPORT

A combined average of participants 69.2% (n=245) were of a view that nurses provided adequate support in teaching them about self- management. A small number, 6.8% (n=24) were neutral. Slightly less than a quarter of participants, 24% (n=85) had a different opinion and disagreed.

4.4 PATIENTS SELF-CARE MANAGEMENT PRACTICES

This section of the study describes information on five essential self-care behaviours to predict good outcomes; namely, healthy eating, being physically active, monitoring blood sugar, compliance to medications and foot care.

Table 4.2 Patients' self-care activities

Patient self-care management activities										
	Always	%	Often	%	Sometimes	%	Rarely	%	Never	%
Measure carbohydrate food portions per serving	148	41.8	118	33.3	48	13.6	11	3.1	29	8.2
Eat snack between meals	124	35	113	31.9	52	14.7	26	7.3	39	11
Eat appropriate servings of food per day	205	57.9	104	29.4	28	7.9	8	2.3	9	2.5
Exercise regularly	176	49.7	93	26.3	48	13.6	17	4.8	20	5.6
Include blood sugar monitoring in your exercise plan	8	2.3	5	1.4	11	3.1	59	17	271	76.6
Eat before exercising	16	4.5	16	4.5	17	4.8	64	18	241	68.1
Take your recommended medications correctly	278	78.5	66	18.6	5	1.4	1	0.3	4	1.1
You keep/store your medications correctly	171	48.3	16	4.5	12	3.4	8	2.3	147	41.5
Do take your drugs everywhere you go	243	68.6	64	18.1	18	5.1	8	2.3	21	5.9
Carrying sweet drink or foodstuff everywhere	167	47.2	86	24.3	25	7.1	20	5.6	56	15.8
Carrying diabetes ID	24	6.8	22	6.2	9	2.5	3	0.8	296	83.6
Strictly keep your doctor's appointments	255	72	82	23.2	8	2.3	2	0.6	7	2
Observe sick day rules	170	48	73	20.6	28	7.9	13	3.7	70	19.8
Use a mirror for inspecting feet daily	12	3.4	12	3.4	7	2	33	9.3	290	81.9
Dry between toes thoroughly after washing feet	117	33.1	80	22.6	11	3.1	15	4.2	131	37
Soak your feet in warm water at least 2-3 times per week	53	15	28	7.9	14	4	43	12	216	61
Wear well-fitting shoes	126	35.6	100	28.2	20	5.6	3	0.8	105	29.7

Based on the frequency statistics in Table 4.2, just over a third 41.8% (n=148) of the respondents stated that they always measured carbohydrate food portions per serving. Approximately 33.3% (n=118) measured often, 13.6% (n=48) sometimes, 8.2% (n=29) never and 3.1% (n=11) rarely measured.

Cumulatively, 66.9% (n=237) participants indicated that they always and often ate snacks between meals, 14.7% (n=52) sometimes, a modest percentage 7.3% (n=26) rarely ate snacks, and 22% (n=39) indicated that they never do.

Regarding eating appropriate servings of food per day, approximately 57.9% (n=205) of the participants said they always do. Approximately 29.4% (n=104) often conform, 7.9% (n=28) sometimes eat the appropriate servings. A small number 2.5% (n=9), never do and 2.3% (n=8) rarely eat appropriately.

Exercise is important in maintaining good glucose level in the blood. Results show that cumulatively, 76% (n=269) of the participants said they always and often exercised. Approximately 13.6% (n=48) exercised sometimes, 5.6% (n=20) never exercised and 4.8% (n=17) rarely exercised.

A small number of participants 3.7% (n=13) indicated that they always and often include monitoring of their blood sugar in their exercise regimen. A high number 93.6% (n=330) never or rarely did. Approximately 4.8% (n=17) did so sometimes.

Regarding eating before the exercise, a high number 86.1% (n=305) never or rarely eat before exercises. A small percentage, 4.8% (n=17) indicated that they do so sometimes, and 9% (n=32) comply with the activity always and often.

Results show that adherence to medication was excellent, with approximately 78.5% (n=278) of the participants taking their recommended medications correctly. Only 18.6% (n=66) took their medication often. A small number, 1.4% (n=5) said they sometimes complied with medication prescription. An equal number 1.4 (n=5) indicated that they never and rarely took recommended medications correctly.

Concerning storage of medication, the results were almost balanced, with 52.8% (n=187) of the participants saying that they stored their medication correctly. A cumulative 43.8%

(n=155) indicated that they never and rarely did. A small minority 3.4% (n=12) sometimes stored their medications correctly.

Diabetic patients were advised to carry their drugs wherever they go. Approximately 68.6% (n=243) of the participants said they complied, while 18.1% (n=64) did so often, 5.1% (n=18) sometimes, 2.3% (n=8) rarely, and 5.9% (n=21) never carried their medication with them.

It is important for the patients to carry a sweet drink or foodstuff with them to mitigate the effects of low blood sugar. Results show that 73.5% (n=255) always and often did, 7.1% (n=25) sometimes, and 21.4% (n=76) indicated that they rarely or never did.

Results show that a high number of patients 84.4% (n=299) never or rarely carried diabetes ID. Approximately 6.8% (n=24) patients always carried diabetes ID's, 6.2% (n=22) often did and a small number 2.5% (n=9), sometimes carried diabetes ID.

Cumulatively, high number of participants 95.2% (n=337) always and often keep doctors' appointments, 2.3% (n=8) sometimes, and 2.6% (n=9) rarely or never keep their doctors' appointments.

Data show that 48.0% (n=170) of the participants always observed sick day rules, 20.6% (n=73) often did, 7.9% (n=28) sometimes, 3.7% (n=13) rarely did and 19.8% (n=70) never did.

Results show that the majority 81.9% (n=290) of the participants never used a mirror for inspecting feet daily. Approximately 9.3% (n=33) did so rarely, 3.4% (n=12) always, and a negligible proportion 3.4% (n=12) often did, and 2.0% (n=7) did so occasionally (sometimes).

Concerning the drying of toes thoroughly after the washing of their feet, a little more than a third 37.0% (n=131), of participants never dried between toes. Almost a similar proportion, 33.1% (n=117), indicated that they always did. Those who said they often did, were 22.6% (n=80). Meanwhile, 4.2% (n=15) said they rarely did and a small number 3.1% (n=11) did so occasionally (sometimes).

A small number 15.0% (n=53), claimed that they always soaked their feet in warm water at least 2-3 times per week, a large number 61.0% (n=216), of the participants said they never did while less than a quarter 12.1% (n=43) said they rarely did. A lower percentage 7.9% (n=28) of participants often do. An even lesser number 4.0% (n=14) said they sometimes soaked their feet in warm water at least 2-3 times per week.

With regard to regular wearing of fitting shoes, 35.6% (n=126) of the participants always wear well-fitting shoes. A little below a quarter 29.7% (n=105) never did, while 28.2% (n=100) often did. Data also indicated that only 5.6% (n=20) sometimes wear well-fitting shoes, while a minimal number 0.8% (n=3) said they rarely wore well-fitting shoes.

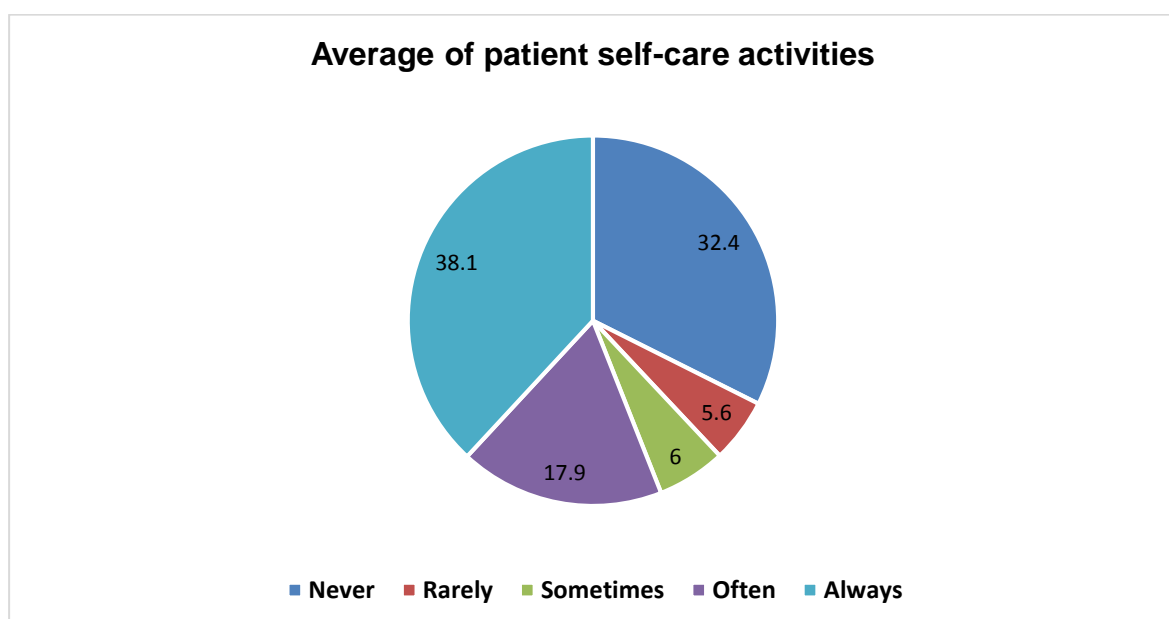


Figure 4.6 Average of patients' self-care activities

Figure 4.6 above shows that on average, 38.1 % (n=135) said they always performed their self-care activities. While 17.9% (n=63) often did so. Approximately 6% (n=21) of the participants sometimes performed their self-care activities, and 5.6% (n=20) rarely did. Finally, 32.4% (n=115) never did their self-care activities.

However, the findings on patients' perceived support for self-management show positive views as shown in Section 2.

4.4.1 Self-care activities by selected demographic variables

Previous studies conducted in western countries found an association between self-care behaviours and patients' demographic characteristics such as age, and gender (Mogre, Abedandi & Salifu 2017:20). The patient's age is often associated with maturity and personal responsibility for self-care. Marital status somewhat shows a patient's support system. The duration of the diabetes disease, reflect the length patients were exposed to self-care empowerment strategies, and their coping ability (Mogre et al 2017:20).

Results show that 66.7% (n=171) of female participants reported engagement with self-management activities. In addition, only 50% (n=102) of participants aged 58 years and above, demonstrated engagement with self-care activities. Approximately 50% (n=75) of the married participants were engaged in self-care activities and were, therefore, able to take care of themselves. 85.7% (n=262) of the participants who have had the condition for longer than one year showed more engagement with self-care activities.

4.5 RELATIONSHIPS BETWEEN PERCEIVED NURSES' SUPPORT AND SELF-CARE ACTIVITIES

The term correlation refers to an association, connection relationship or a form of a link. Mukaka (2012:69) defines correlation as a form of quantifying the strength of the linear relationship between the outcomes of two or more variables. Bivariate refers to relationships between two variables (Kaushik & Mathur 2014:1189).

Spearman's rho measured the strength of association or the magnitude of the relationship between the two variables in question and measured in ordinal scale. Each variable on perception was correlated to the corresponding self-care-activity. The test did not consider independent or dependent variables. It merely showed monotonic relationships and investigated direction and the strength of those relationships (Polit & Beck 2012:392; Maree 2016:14). This test may be implemented when data distribution is seriously skewed (Liu, Xu & Guo 2013:274). A *p*-value of 0.01 was considered statistically significant.

Although there is no absolute way to guide interpretation of all correlations due to various associated factors, a correlation of zero indicated that no linear relationship existed. A

correlation of $r=1$ means a perfect positive correlation, while value $r=-1$ means a perfect negative correlation. The closer the correlation was to $+1$, the stronger it is (Mukaka 2012:71). However, interpretation of the strength of a correlation was made using the following common way:

- 0.90 to 1 Very strong
- 0.70 to 0.90 Strong
- 0.40 to 0.70 Moderate to strong
- 0.20 to 0.40 Low to moderate
- 0.10 to 0.20 Very low or weak
- 0.00 to 0.10 Little or no relationship (Tappen 2016:349).

The Spearman's correlation results in this study ranged from high, moderate, and weak positive correlation.

- **Moderate to strong correlations**

Table 4.3 Perception of teaching on importance of soaking feet related patients' practices

Spearman's rho	Teaching on Importance of soaking feet	Patient's practice of soaking feet		
		Correlation Coefficient	.526	<i>p</i> -value
		Sig. (2-tailed)	0.000	0.000
		Total (n)	354	

**Correlations are significant at the 0.01 level (2 tailed)

Spearman's results show that a moderate relationship exists at 0.01 level ($\rho=0.526$). Therefore, there was enough evidence to support that a relationship existed between teachings on the importance of soaking feet and patients' practice of soaking feet.

Table 4.4 Perception of teaching on importance of proper storage of drugs and related patients' practices

Spearman's rho	Teaching the importance of proper storage of drugs	Patient's practice of proper storage of drugs		
		Correlation Coefficient	.509	<i>p</i> -value
		Sig. (2-tailed)	0.000	0.000
		Total (n)	354	

**Correlations are significant at the 0.01 level (2 tailed)

The Spearman rho results show ($\rho=.509$), a moderate correlation relationship at 0.001 level. This correlation was between perceptions on the adequacy of teachings on the importance of proper storage of drugs, and the patients' practice of storage of drugs.

- Low to moderate correlations**

Table 4.5 Perception of teaching on importance of carrying diabetes ID band related patients' practices

Spearman's rho	Teaching the importance of carrying diabetic ID band	Patient's practice of carrying diabetic ID band		
		Correlation Coefficient	.396	<i>p</i> -value
		Sig. (2-tailed)	0.000	0.000
		Total (n)	354	

**Correlations are significant at the 0.01 level (2 tailed)

The Spearman rho results show ($\rho=.396$) a low to moderate statistical relationship at 0.001 level. It also shows the perceptions of teachings of the importance of carrying diabetic ID band and patients' practice of carrying diabetic ID band.

Table 4.6 Perception of teaching on importance of eating snacks between and related patients' practices

Spearman's rho	Teaching on eating snacks between meals (108)	Patient's practice of eating snacks between meals (131)		
		Correlation Coefficient	.368	<i>p</i> -value
		Sig. (2-tailed)	0.000	0.000
		Total (n)	354	

**Correlations are significant at the 0.01 level (2 tailed)

The Spearman rho results show ($\rho=.368$) a low to moderate statistical relationship at 0.001 level, between perceptions on teachings on the importance of eating snacks between meals, and patients' practice of eating snacks between meals.

Table 4.7 Perception of teaching on importance of thoroughly drying feet and related patients' practices

Spearman's rho	Teaching on thoroughly drying between toes (120)	Patient's practice of thoroughly drying between toes (143)		
		Correlation Coefficient	.350	<i>p</i> -value
		Sig. (2-tailed)	0.000	0.000
		Total (n)	354	

**Correlations is significant at the 0.01 level (2 tailed)

The results show ($\rho=.350$) a low to moderate significant statistical relationship at 0.001 level, between perceptions of teachings on the importance of thoroughly drying between toes and related patients' practices.

Table 4.8 Perception of teaching on importance of wearing well-fitting shoes and related patients' practices

Spearman's rho	Teaching on wearing well-fitting shoes (119)	Patient's practice of wearing well-fitting shoes (145)		
		Correlation Coefficient	.320	<i>p</i> -value
		Sig. (2-tailed)	0.000	0.000
		Total (n)	354	

**Correlations are significant at the 0.01 level

The results show ($\rho=.320$) a low to moderate statistical relationship at 0.001 level, between perceptions of teachings on the importance of wearing well-fitting shoes, and patients' self-care practice

Table 4.9 Perception of teaching on importance of wearing keeping doctor's appointment and related patients' practices

Spearman's rho	Teaching on keeping of doctor's appointments (112)	Patient's practice of observing dr appointments (140)		
		Correlation Coefficient	.307	<i>p</i> -value
		Sig. (2-tailed)	0.000	0.000
		Total (n)	354	

**Correlations are significant at the 0.01 level (2 tailed)

The results show ($\rho=.307$) a low to moderate statistical relationship at 0.001 level, between perceptions of teachings on the importance of keeping doctors' appointments, and patients' observance of those appointments.

Table 4.10 Perception of teaching on importance of measuring carbohydrate portions and related patients' practices

Spearman's rho	Teaching on measuring carbohydrates (107)	Patient's practice on measuring carbohydrates (130)		
		Correlation Coefficient	.270	<i>p</i> -value
		Sig. (2-tailed)	0.000	0.000
		Total (n)	354	

**Correlations are significant at the 0.01 level (2 tailed)

The results show ($\rho=.270$) a low to moderate statistical relationship at 0.001 level, between perceptions of teachings on the importance of measuring carbohydrate portions, and patients' related practices.

Table 4.11 Perception of teaching on importance appropriate servings of variety of foods and related patients' practices

Spearman's rho	Teaching on appropriate servings of a variety of foods	Patient's practice taking appropriate servings of food variety (132)		
		Correlation Coefficient	.252	<i>p</i> -value
		Sig. (2-tailed)	0.000	0.000
		Total (n)	354	

**Correlations are significant at the 0.01 level (2 tailed)

The results show ($\rho=.252$) a low to moderate statistical relationship at 0.001 level, between perceptions of teachings on the importance of appropriate servings of a variety of food, and patients' practice of taking appropriate servings of food.

Table 4.12 Perception of teaching on importance of taking recommended dosage of medications and related patients' practices

Spearman's rho	Teaching on importance of taking recommended dosage of medications(116)	Patient's practice of taking recommended dosage of medications (135)		
		Correlation Coefficient	.232	<i>p</i> -value
		Sig. (2-tailed)	0.000	0.000
		Total (n)	354	

**Correlations are significant at the 0.01 level (2 tailed)

The results show ($\rho=.232$) a low to moderate statistical relationship at 0.001 level, between perceptions of teachings on the importance of taking the recommended dosage of medications, and patients' practices

Table 4.13 Perception of teaching on importance of always carrying sweet foodstuff and related patients' practices

Spearman's rho	Teaching on Importance of always carrying sugary food staff	Patients practice of always carrying always carrying sugary foodstuff		
		Correlation Coefficient	.215	<i>p</i> -value
		Sig. (2-tailed)	0.000	0.000
		Total (n)	354	

**Correlations are significant at the 0.01 level (2 tailed)

The results show ($\rho=.252$) a low to moderate statistical relationship at 0.001 level, between perceptions of teachings on the importance of always carrying sweetfoodstuff, and patients' related practice.

- **Very low or weak correlations**

Table 4.14 Perception of teaching on importance of using a mirror to inspect feet and related patients' practices

Spearman's rho	Teaching on Importance of using a mirror to inspect feet	Patient's practice of using mirror to inspect feet		
		Correlation Coefficient	.178	<i>p</i> value
		Sig. (2-tailed)	0.000	0.000
		Total (n)	354	

**Correlations are significant at the 0.01 level (2 tailed)

The results show ($\rho=.178$) a low to moderate statistical relationship at 0.001 level, between perceptions of teachings on the importance of using a mirror to inspect feet, and patients' practice of using a mirror to inspect feet.

Table 4.15 Perception of teaching on importance of regular moderate exercises and related patients' practices

Spearman's rho	The teaching of regular moderate exercises	Patient's practice of being active		
		Correlation Coefficient	.169	<i>p</i> value
		Sig. (2-tailed)	0.000	0.000
		Total (n)	354	

**Correlations is significant at the 0.01 level (2 tailed)

The results show ($\rho=.169$) a low to moderate statistical relationship at 0.001 level, between perceptions of teachings on the importance of regular moderate exercises and patients' practice of being active.

4.6 CONCLUSION

This chapter discussed results obtained from the data analysis undertaken among type 2 diabetic patients at the Donga Clinic of Excellence in Francistown. Descriptive statistics were reported in frequencies. The results of Spearman's rho are also presented. Chapter 5 offers an interpretation of these results and uses literature to support or refute the findings.

CHAPTER 5

INTERPRETATIONS, DISCUSSION OF FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS

5.1 INTRODUCTION

This chapter concludes the report by presenting a discussion of the results, conclusions, strength and limitations of the study and recommendations. This study intended to find answers to the following research questions:

- What are type 2 diabetes mellitus patients' self- management practices?
- How do type 2 diabetes mellitus patients perceive nurses' support for self-management?
- What is the relationship between the perceived nurses' support and self-management among type 2 diabetes mellitus patients?

This study presumed that nurses at the Donga Diabetes Clinic of Excellence, adequately supported and empowered diabetic patients through DSME and DSMS strategies to enable them to self-manage their condition.

5.2 SUMMARY AND INTERPRETATION OF THE RESEARCH FINDINGS

5.2.1 Patients demographic profiles and clinical characteristics

In this study, 57% of participants were 58 years and above, only 50% of the participants in this age group did demonstrate engagement with self-care activities. Less than half (42.1%) were married and only 50% of the married participants were found to be engaged in self-care activities. Mogre et al (2017:20) also found no association between marital status and self-care practices. Most of the participants either were single, due to death, divorce, separation, or had never married. Their support system is not known, nevertheless, it would be important for nurses to establish their support base to strengthen the teaching/support that would include their significant others.

The majority 70%, had either primary education, no formal education or never studied. The study assumed that patients in this age group would need constant and intense professional support. The challenge of low educational level may restrict their understanding of the teaching and the ability to self-manage. This might have implications on communication patterns used in health education/promotion. Koponen et al (2015:2) argue that even though patients have little knowledge or skill, they must cope with self-management demands, threats of complications, and possible effects on their daily functioning. Mogre et al (2017:20) also indicated some associations between self-care behaviours and patient's education, age and gender. This implies that various teaching strategies would have to be applied to reach out to this group.

The majority of participants (86.4%) had suffered from diabetes for more than one year. The finding suggests that they had adequate exposure to DSME and DSMS, therefore, they would be skilful enough to self-manage the condition. The results confirmed this assumption, as this group showed higher levels of engagement with self-care activities.

5.2.2 Patients perception of professional support

Ku and Kegels (2014:14) indicate that patients who perceive higher empowerment (professional support) are often actively involved in self-care. This empowerment is necessary since they encounter situations where they have to make self-care decisions on a daily basis.

5.2.2.1 Positive patient's perceptions of professional support

The findings showed that participants had a positive perception of support on diet modification, the majority agreed that nurses adequately taught them about diabetes diet plans. Diet modification is essential in diabetes control. The finding is supported by Rasheed (2013:19-20) who claim that diet management in diabetes education is significant and improves outcomes for patients. There was enough emphasis on the value of not missing a doctor's appointment. Apart from teachings by the nurses, other health team members such as pharmacists, dieticians and physicians could have had an influence, as this clinic follows a multidisciplinary approach. However, this study focused on nurses and the question was clarified to participants.

According to the American Diabetes Association (2013, 2015, 2016), diabetes' sick days' rule (sick day advice) refers to what patients are expected to do when they are not well. Slightly over half of patients (53.1%), reported that they received adequate teaching on observing sick day rules. They also indicated that they received adequate advice on the value of frequent exercise, appropriate storage of drugs, taking medicines correctly, and the need of carrying sweet foodstuff and diabetes medications. These factors are vital to maintaining a reasonable level of blood glucose and the results showed a positive response and areas of strength in Diabetes Self-Management Education. Klein, Jackson, Street, Whitacre and Klein (2013:2) agree that risk control measures and information empower patients.

5.2.2.2 Negative patient's perceptions of professional support

Other aspects were not rated as positive. Regarding foot care, patients reported that they were not provided with adequate support. They strongly disagreed that they received adequate support regarding soaking of their feet (65.0%), drying their feet thoroughly (52.8%), and inspecting their feet (74.9%). This implied that most participants were ignorant about the importance of foot care. According to Valk et al (2007) cited in Fan (2012:121), foot ulceration, lower limb amputation and expensive complications for persons with diabetes mellitus were preventable. Fan (2012:126) further posit that the most common cause of self-injury in diabetes mellitus patients is associated with ill-fitting shoes and the support for prevention of foot problems is a cost-effective approach in DM management. The findings imply that this area of (DSME) needs to be strengthened.

Professional support for self-monitoring was perceived as very low or negligible. Findings revealed that slightly over half of participants (57.6%) were of a view that the teaching or support nurses provided to recognise symptoms of low or high blood sugar, was not adequate. Patient's ability to perceive, experience and identify signs of both low and high blood sugar levels is cardinal to their reaction time and prevention of coma in diabetes. Huang, Zhao, Li and Jiang (2014:4) confirmed that misconceptions that hypoglycaemia was not a key concern for diabetes patients could hinder efforts towards prevention and self-management.

More than half of the participants (65.8%) strongly expressed that teachings about blood sugar monitoring in the exercise plan were not adequate. An additional 14.1% disagreed.

This is a very high number, which means the majority were not aware of how they were to monitor their blood sugar before, during or after exercise. Patients could be predisposed to exercise-induced hypoglycaemic attacks if they are not advised of the value of checking blood sugar before exercises (Kirk & Stegner 2010:435).

The teaching on signs and symptoms of hyperglycaemia, hypoglycaemia or blood sugar monitoring, was viewed as inadequate (57.6%). The fact that most diabetic patients are unable to notice signs and symptoms could make them delay seeking medical attention. Insufficient support for risk control has significant implications on the patient's response to facilitate glycaemic control (Gebremedhin et al 2014:165). The authors reiterate nurses' significant role in teaching patients to monitor and interpret blood sugar. Glycemic control is essential in reducing both micro and macrovascular complications. Good glycemic control is achieved through pharmacological interventions and self-management practices. The latter includes weight loss, being active and healthy eating (Fan 2012:23; Suzuki-Saito, Yokokawa, Shimada & Yasumura 2013:206).

Findings also show that a high percentage (80.5%) of participants indicated that they were never advised to always carry a diabetes ID band with the required information. This translated in a negligible number that stated that they had a diabetic band. Diabetic ID band gives helpful information that can facilitate quick and efficient response to a diabetes emergency.

5.2.3 Patients' perceptions of nurses' motivational behaviour

Burke et al (2014:45) believe that nurses are at the forefront and are better placed to educate, coach and support patients to self-manage. Study results show that 69.4% of the patients strongly agreed or agreed that nurses encouraged them to ask questions. Allowing patients to ask questions helps to enhance an honest relationship, increase patient's self-confidence, and fill a communication gap which will consequently improve patient's co-operation and participation in their care (Rasheed 2013:37).

A combined majority (72%) agreed that nurses gave them a listening ear. Patients believed that nurses needed to take time to motivate them to develop their self-care skills. It is therefore, evident from the data that nurse's motivation is key to enhancing self-management in diabetic mellitus patients. This finding is in line with Fort et al (2013:131),

who claimed that patients' perception and effective communication between healthcare workers and patients played an essential role in the promotion of lifestyle changes and chronic disease management.

More than half 68% of the participants believed that nurses should actively involve them in self-care decisions and plans. Boger et al (2015:2) believe that self-management is an ideological approach and a change in thinking from patients being passive recipients, to active partners in their care. This approach views patients as responsible for most of their therapy and quality life (Arkeberg & Forsgren 2016:7; Luan et al 2017:1173). In addition, it places nurses at the centre of diabetes self-management education (DSME) and diabetes self-management support (DSMS).

5.3 PATIENTS' SELF-MANAGEMENT PRACTICES

As discussed in earlier chapters, self-care is considered a cornerstone of the overall management of diabetes. Consistent demonstration of self-care behaviours has the potential of improving quality of life, preventing complications, and reducing both the direct and indirect costs associated with the disease (Jalaludin, Fuziah, Hong, Mohamad & Jamaiah 2012:10).

Study findings revealed that patients performed well with the following self-management practices:

- Taking recommended medication (78.5%, always did)
- Carrying sweet drink or foodstuff with them (73.5%, always did).
- Keeping doctor's appointment (72%, always did)
- Carrying medication everywhere 68.6%, always did)
- Taking snacks between meals (66.9% %, always),
- Taking appropriate servings of food (57.9%, always did)

The effective management of diabetes requires higher adherence levels in all dimensions of disease management. Ideally, patients must always carry out these activities to maintain good glycaemic control. Adherence to medication had the highest score, followed by carrying a sweet foodstuff and keeping appointments. However, they still fell

short of the ideal, an almost 100% self-care activity is preferred, for maximum control. Diabetic patients are instructed to carry their drugs with them especially, when they will be out of their dwellings for long hours, yet, the compliance level was low. In other words, patients did not seem to have understood the risks involved in not having their medication wherever they went. These findings are consistent with Shrivastava et al (2013:17), who found that only 30% of diabetic patients were fully compliant with self-care activities, especially, among low socio-economic groups.

Cumulatively, 75.1% of patients reported that they measure carbohydrate portion always or often. Meanwhile, 76% said they always and often exercise. Exercise is essential in maintaining the right glucose level in the blood. Engaging in exercises is associated with improved outcomes in diabetic patients. Being active means participating in moderate exercises for 30 minutes 3 times per week (Shrivastava et al 2013:16). The two factors had higher scores, and they could assist in maintaining correct blood glucose levels. However, a high number of patients, 93.6%, never and rarely included blood sugar monitoring in their exercise regimen. Shrivastava et al (2013:15) asserts that exercise is significant, however, blood sugar monitoring is central in diabetes management. It guides diet, exercises and medication adjustment. Exercising without prior monitoring of blood sugar or eating could precipitate a hypoglycemic attack or coma (Gebremedhin et al 2014:165). The implications are enormous, failure to monitor risks render patients vulnerable to complications. To foster complete understanding of effective glycaemic control, patients need to understand and consistently carry out all these activities.

Concerning storage of medication, the results were almost balanced, with 52.8% of the participants stating that they stored their medication correctly. A cumulative 43.8% indicated that they never and rarely did. Improper storage of medication could affect drug potency and effectiveness.

Results revealed that most participants (84.4%) never carried a diabetic ID band. In addition, 86.1% never or rarely ate before exercising. Also, 81.9% never used a mirror to inspect their feet. Generally, self-care activities related to foot care were very low. The finding is supported by Fan (2012:102), who revealed that on the average, participants have lower levels of foot self-care behaviours. The combination of these factors could have devastating effects on easy identification, response to an emergency, including unnecessary complications. Norris, Engelgau and Narayan (2001:3) found a significant

knowledge deficit in 50% of individuals with type 2 diabetes; the ideal glycaemic control was achieved in less than half of these patients. This was supported by Isara et al (2014:11), who cited lack of knowledge as one of the barriers to effective self-management practices.

Over half 68.6% of patients reported that they always and often observed sick day rules. Findings are consistent with studies that revealed that most diabetic patients readily comply with straightforward self-management activities (Ruggiero, Glasgow, Dryfoos, Rossi, Prochaska, Orleans, Prokhorov, Rossi, Greene, Reed, Kelly, Chobanian & Johnson 1997:1). In this study, patients reported positive adherence in aspects where they had positive views of nurses' support, as well as in life threatening aspects of disease management.

5.3.1 Average of patients' reported self-care activities

The results show that cumulative self-care activities were slightly above half, with 56% of participants reporting that they always and often performed their self-care activities. Of the most concern is the 32.4% that never carried their self-care activities. This finding has significant implications on health promotion interventions. This finding is in line with Shrivastava et al (2013:14) who indicated that, despite the value placed on self-care teachings, the compliance, or adherence, to activities was still low in patients with diabetes. Similarly, in a study on influences on diabetic patients' self-care engagement, Bower et al (2009:3) cite lack of information as one of the key barriers to self-care management in diabetes mellitus. A higher percentage of patients viewed nurses' support as adequate. However, some positive perceptions did not translate to higher self-management activities as shown below.

5.4 CORRELATION BETWEEN PATIENTS' PERCEPTION OF NURSES' SUPPORT AND SELF-MANAGEMENT

Statistical tests were conducted to examine the relationships between patients' perceptions of nurses' support and their self-management activities. These variables were tested for their level of significance to identify associations between them. Generally, the results revealed that diabetic patients who had positive perceptions of professional support tended to have positive self-management practices, albeit not all

demonstrated this relationship. D'Souza et al (2015:86) support findings, and posit that diabetic patients who perceive higher empowerment have higher success with self-management and glycaemic control.

5.4.1 Moderate to strong positive correlations

A few variables showed a moderate statistical relationship between diabetes mellitus patients' perceptions of nurses' support and self-care practices. Regarding teachings on the importance of soaking feet, the majority indicated that they did not receive adequate support and this was evident in their self-care activities. Spearman's rho was ($p=0.526$).

64.7% viewed nurses' support as adequate in teaching them to store medication correctly, and that translated to 52.8 % who reported that they did. Correlation between the two variables was ($p=0.509$). This is a good indication that patients' perceptions influenced their self-management practices.

5.4.2 Low to moderate correlations

Study results below show low to the moderate statistical correlations between the perceived adequacy of teaching/support and related self-management activities:

- carrying diabetes ID band ($p=.396$)
- eating snacks between meals, ($p=.368$)
- thoroughly drying feet ($p=.350$)
- wearing well-fitting shoes ($p=.320$)
- keeping the appointment ($p=.307$)
- measuring carbohydrate portions ($p=.270$)
- appropriate servings of a variety of foods($p=.252$)
- taking the recommended dosage of medications ($p=.232$)
- always carrying sweet foodstuff ($p=.215$)

The p values indicate that the strength of the association was not good enough to draw conclusive remarks. Other variables could have influenced patients on the stated variables.

5.4.3 Very low or weak correlations

Correlations between patients' self-care practices and patients' perceptions of teachings on the importance of using a mirror to inspect feet ($p=.178$), regular moderate exercises ($p=.169$). These values are very low and not significant. Since correlation indicates the presence of a relationship and not the nature of the relationship, these values indicate that the probability of this correlation occurring by chance is less than one out of 1000 (Tappen 2016:349).

5.5 RECOMMENDATIONS

5.5.1 Health policy

Following the findings of this study, the following recommendations are made:

- None communicable disease (NCD) unit of the ministry of health develop new strategies to promote diabetic patients' self-management.
- There should be plans to monitor and evaluate the effectiveness of the current Diabetes Self-Management Education (DSME).
- Facilities diabetes excellence ought to be extended to the rural settings in order to empower and meet critical self-care needs of diabetic patients.

5.5.2 Health promotion

The availability of diabetes care in health facilities, i.e. in district, primary and referral hospital, demands the provision of intensive health education to the diabetic patients, family members and the public at large regarding diabetes self-management. The following recommendations may assist in health promotion:

- Professional support to start when the patient enrolls at the clinic.
- Patients' preferences should be incorporated in the organisation of health promotion
- Diabetes clinics should conduct regular diabetes self-management education (DSME) and diabetes self-management support (DSMS) sessions.
- Community diabetes support services should be implemented and re-enforced.

- Significant others and family living with the patient should also be empowered regarding self-management, to enhance informed support system.

5.5.3 Further research

The researcher makes the following recommendations regarding further research:

- Quantitative and qualitative research studies may be carried out to find out factors that impede self-management practices in type 2 diabetic patients in Botswana.
- Studies on self-care and professional support that target a larger sample of diabetic patients in varied setting may be beneficial to determine the extent of the problem.
- Studies to determine diabetes readiness for self-care, how diabetic patients are prepared for self-care would give insight into complex factors that affect self-care.

5.6 CONTRIBUTION OF THE STUDY

Patient views are extremely relevant for practice, which is the reason patients' perspectives were the focus of this study. Insight into patients' perspectives can help health care professionals to begin to understand important issues, and how best to educate patients in self-management (Beresford 2014:391). Nurses can derive a wealth of insights and understandings from this study to enable them to design acceptable educational packages for diabetic patients. Studies in the western countries on patients' perspectives have shown that patients' perceptions are closely related to a patient's locus of control and positive attitude in diabetes management (Hayashino & Ishii 2015:111).

This study has unveiled great insights and understanding into how patients perceive nurses' support, and how their perception affects their self-management practices. The benefit of empowering diabetic patients to self-manage was demonstrated. Results showed that patients had both positive and negative perceptions regarding varied aspects of professional support. Patients believed that nurses gave adequate self-management support especially, in diabetic diet modification, being active and taking medications correctly. On the other hand, there are aspects where patients expressed gaps in professional support such as, emphasis on the value of carrying a diabetic ID band, diabetic foot care expectations and glycaemic monitoring.

Although the study revealed positive perception of nurses' motivational behaviours, patients strongly indicated that nurses could do more to support development of their self-care skills by actively involving them. In addition, the study showed that patient's age, marital status and educational level do not necessarily determine patient's preparedness for self-care. Certain DSME and DSMS aspects that need strengthening for diabetes patient self-management were identified.

The correlations between patients' perceptions and their self-management behaviour are provided, a few were moderate and most low to weak. These findings are significant in that an association was discovered, irrespective of the strength. There was no attempt to establish one variable as dependent and the other as independent. Thus, relationships identified using Spearman's rho were interpreted for associations, not causal relationship (Mukaka 2012:69).

The findings could be beneficial to the diabetes management in Botswana, to inform protocols and policies regarding diabetic patients' empowerment. They could also help health professionals to examine current health promotion practices and take corrective measures to how they prepare diabetes mellitus patients for self-management. The significant contribution is that, this study documented diabetic patients' self-management practices and their perceptions of nurses' support.

5.7 LIMITATIONS OF THE STUDY

Some limitations were noted. The study focused only on the patients' perceptions of professional support and the extent to which these affected their self-management behaviour. Only teachings contained in the DSME and DSMS were included.

The study was limited to type 2 diabetes mellitus patients in one location. Francistown is an urban setting that may not reflect experiences of diabetic patients from a rural setting. However, the use of an advanced statistical approach strengthened the findings to overcome any possible limitations.

The fact that study sample had high numbers of females (256) as compared to males(98) could imply that a greater input of male diabetic was missed.

5.8 CONCLUSIONS

The study revealed that on average, self-care practices of diabetes mellitus patients were sub-optimal, with only (56%) reporting that they always and often carried out self-care activities. The major concern is the 32% of patients who said they never did. The data revealed the need for a follow up study, to explore factors related to these findings. The self-activities that could be life threatening such as, diet, being active, keeping doctors' appointments and medications were carried out, albeit at not ideal levels. The relationship between several socio-demographic variables and self-management were highlighted. There might be a need to review certain aspects of DSME that were found to be weak, new strategies could be developed to strengthen those areas to maximise support for patients. The study concludes that patients' perceptions of care, self-management and professional support through DSME and DSMS are crucial factors in diabetes management.

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ANNEXURES

ANNEXURE A: APPLICATION TO CONDUCT RESEARCH

The Chairperson
Ministry of Health
Health Research Unit
P/Bag 0038
Gaborone

RE: Request permission to conduct a research study

Dear Sir /Madam

Permission is hereby sought to conduct the above-entitled study at Nyangabgwe Referral Hospital and Donga diabetes Clinic of excellence.

I am currently pursuing a course leading to masters in Nursing Sciences Degree at the School of HealthcareScience, University of South Africa (UNISA) South Africa. I am required to conduct a research project and submit a report for my thesis course.

The purpose of this study is to examine and describe diabetes patient's perceptions of nurse's support for self-management in Botswana. The aim is to improve clients' skills in self-management and to strengthen diabetes healthcare management.

A researcher administered questionnaire will be used as a data collection method in a face to face (personal) interview with study participants. An explanation about the research project including the title, aims, objectives, benefits to society and study participant voluntary nature of the research and guarantee of participant's privacy will be given to the study participants in the study and the interview will be conducted with those who consent to be in the study.

This kind of study has not be done before at this hospital and the hospital is likely to benefit from the outcome of the study as it will provide baseline insight in the diabetes patients lived experiences during care provision.

The Department of Health Sciences Research ethical clearance committee has reviewed the study proposal, University of South Africa (UNISA) Higher Degrees Committee and permission/ethical clearance will be sought from Nyangabgwe management and Research ethical committee respectively: please find enclosed the proposal and relevant clearance certificates.

I wish to seek permission to carry to out a research in the diabetes clinic of excellence at Donga Clinic and the general wards in Nyangabgwe Hospital.

I will be grateful for the permission and your support if you would give your permission for me to conduct this study at Nyangabgwe Referral Hospital and Donga diabetes clinic.

Thank you in anticipation

Mrs Rose Kiwala Kajinga

ANNEXURE B: PERMISSION TO CONDUCT STUDY

TELEPHONE: 363 2766
FAX: 391 0647
TELEGRAMS: RABONGAKA
TELEX: 2818 CARE BD



Republic of Botswana

MINISTRY OF HEALTH
PRIVATE BAG 0038
GABORONE

REFERENCE NO: HPDME 13/18/1 XI (106)

19 April 2017

Health Research and Development Division

Notification of IRB Review: **New application**

Rose Kiwala Kajinga
Institute of Health Sciences
Box 267
Francistown
Botswana

Dear Rose

Protocol Title:

EXAMINING THE PERCEIVED NURSES' SUPPORT FOR SELF-MANAGEMENT AMONG TYPE 2 DIABETES MELLITUS PATIENTS IN BOTSWANA

HRU Approval Date:	19 April 2017
HRU Expiration Date:	18 April 2018
HRU Review Type:	HRU reviewed
HRU Review Determination:	Approved
Risk Determination:	Minimal risk

Thank you for submitting new application for the above referenced protocol. The permission is granted to conduct the study.

This permit does not however give you authority to collect data from the selected sites without prior approval from the management. Consent from the identified individuals should be obtained at all times.

The research should be conducted as outlined in the approved proposal. Any changes to the approved proposal must be submitted to the Health Research and Development Division in the Ministry of Health for consideration and approval.

Furthermore, you are requested to submit at least one hardcopy and an electronic copy of the report to the Health Research, Ministry of Health within 3 months of completion of the study. Approval is for academic fulfillment only. Copies should also be submitted to all other relevant authorities.

Continuing Review

In order to continue work on this study (including data analysis) beyond the expiry date, submit a Continuing Review Form for Approval at least three (3) months prior to the protocol's expiration

date. The Continuing Review Form can be obtained from the Health Research Division Office (HRDD), Office No. 7A.7 or Ministry of Health website: www.moh.gov.bw or can be requested via e-mail from Mr. Kgomotso Motlhanka, e-mail address: kgmmotlhanka@gov.bw. As a courtesy, the HRDD will send you a reminder email about eight (8) weeks before the lapse date, but failure to receive it does not affect your responsibility to submit a timely Continuing Report form.

Amendments

During the approval period, if you propose any change to the protocol such as its funding source, recruiting materials, or consent documents, you must seek HRDC approval before implementing it. Please summarize the proposed change and the rationale for it in the amendment form available from the Health Research Division Office (HRDD), Office No. 7A.7 or Ministry of Health website: www.moh.gov.bw or can be requested via e-mail from Mr. Kgomotso Motlhanka, e-mail address: kgmmotlhanka@gov.bw. In addition submit three copies of an updated version of your original protocol application showing all proposed changes in bold or "track changes".

Reporting

Other events which must be reported promptly in writing to the HRDC include:

- Suspension or termination of the protocol by you or the grantor
- Unexpected problems involving risk to subjects or others
- Adverse events, including unanticipated or anticipated but severe physical harm to subjects.

If you have any questions please do not hesitate to contact Mr. L. Moremi at lamoremi@gov.bw, Tel +267-3914467 or Kgomotso Motlhanka at kgmmotlhanka@gov.bw at 3632751. Thank you for your cooperation and your commitment to the protection of human subjects in research.

Yours faithfully



L. Moremi
For /Permanent Secretary



Vision: A Model of Excellence in Quality Health Services.
Values: Botho, Equity, Timeliness, Customer Focus, Teamwork.



TELEPHONE: 2411000 ext 180

FAX : 2416706/2419387



Republic of Botswana

NYANGABGWE HOSPITAL

PRIVATE BAG 127

FRANCISTOWN

BOTSWANA

REF: NH/I/2/17 II (27)

15 June 2017

Ethical Review of Proposed Study: Examining the Perceived Nurses' Support for Self-Management Among Type 2 Diabetes Mellitus Patients In Botswana

Name of Applicant : Rose Kiwala Kajinga

Name of Site : Nyangabgwe Referral Hospital

Decision : 14 June 2017

Expiration Date : 18 April 2018

The Institutional Review Board (Research & Ethics Committee) for Human Subjects Research for Nyangabgwe Hospital is pleased to inform you that the research protocol named above was approved.

The study involves data collection from Nyangabgwe Hospital no more than minimal risk. It is a non therapeutic research and does not involve the use of devices for which there is limited knowledge. The protection of data collection protection has been outlined.

The research should be conducted as outlined in the approved proposal. Any changes to the approved proposal must be submitted to the Hospital Research and Ethics Committee. In addition you are expected to submit at least one hard copy and an electronic copy of the report to the committee within three months of completion of the study.

Signed.....

B.R. Munyere

Chairperson-Research & Ethics Committee/

For Hospital Superintendent

GREATER FRANCISTOWN DHMT

ALL CORRESPONDENCE TO
BE ADDRESSED TO DHMT
COORDINATOR



PRIVATE BAG F372
FRANCISTOWN BOTSWANA
TELEPHONE: 2413808
FAX: 2406178

Republic of Botswana

REF: GFHMT 7/1/11

DATE: 31st May 2017

TO: Rose Kiwala Kajinga
Institute of Health Sciences
P.O.Box 267
Francistown

Dear Sir/Madam

REQUEST TO CONDUCT RESEARCH

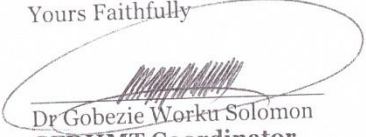
Reference is made to your request letter on the above mentioned subject.

Permission is hereby granted to you to do research at Greater Francistown District Health Management Team health facilities as per your request.

You are therefore requested to contact nurses in charge of the facility you will be visiting, who will take all the necessary steps to enable you to do your research.

Thank you.

Yours Faithfully


Dr Gobezie Worku Solomon
GFDHMT Coordinator

cc: Nurses in charge – Masego
Boikhutso
Botswelero

ANNEXURE C: CONSENT FORM

Introduction

You are being asked to be in a research study to determine how diabetes patients perceive nurses' support in helping them self-manage their diabetes mellitus. You were selected as a possible participant because you are a diabetes patient enrolled for follow-up care at Donga diabetes clinic /admitted in Nyangabgwe.

The full title of Project: Examining the perceived nurses' support for self-management among type 2 diabetes mellitus patients in Botswana

The aims of the project

The purpose of this study is to examine and describe diabetes patient's perceptions of nurse's support for self-management in Botswana. The aim is to improve clients' skills in self-management and to strengthen diabetes healthcare management.

Researcher's details

Name: Rose Kiwala Kajinga

Position: lecturer at the Institute of health science's

Address of Researcher: Box 267, Francistown, Botswana.

Contact Numbers 267 732 600 13 / +267 717 339 14

Description of the study procedures (What we will ask you to do)

If you agree to be in this study, we will interview with you. The interview will include questions about your perception of nurses' support to self-manage your condition. The interview will take about 30- 45 minutes to complete.

Risks and benefits

I do not anticipate any risks to you participating in this study other than those encountered in day-to-day life. I will protect you from all harm during the interview. The study will give

you an opportunity to voice your views, ask questions, and seek clarification on issues of concern.

Payments

There is no payment to participants involved in this study.

Your answers will be confidential

- This study is anonymous. We will not be collecting or retaining any information about your identity.
- The records of this study will be kept strictly confidential. Research records will be kept private in a locked file, and all electronic information will be coded and secured using a password protected file, the research team will only access information. We will not include any information in any report we may publish that would make it possible to identify you.

Taking part is voluntary

Taking part in this study is entirely voluntary. The decision to participate in this study is entirely up to you. You may refuse to take part in the study at any time and this will not affect your relationship with the investigators of this study or institution. Your decision will not result in any loss or benefits to which you are otherwise entitled. You are requested to answer all questions as this will assist us in getting complete facts related to the study questions. You have the right to withdraw entirely from the interview at any point during the process without any penalty.

Right to ask questions and report concerns

You have the right to ask questions about this research study and to have those questions answered by me before, during or after the research. If you have any further questions about the study, please feel free to ask me.

I am willing to participate: _____

ANNEXURE D: QUESTIONNAIRE



College of HUMAN Sciences
School of SOCIAL SCIENCES

Department of HEALTH STUDIES

31362281 Kajinga Annexure A Questionnaire

Dear Participant

This structured questionnaire was designed as an instrument to elicit information regarding diabetes your perception of professional support for self-care and self-management. Considerable value is given to the fact that your input will contribute possible improvement of diabetes self-care management strategies.

Kindly note that your participation is entirely voluntary, your identity remains anonymous, no personal information will be disclosed to anyone and all information you provide will remain confidential. Your integrity will in no way be compromised, and you are also at liberty to withdraw from this study at any point, should you feel so.

If you do not wish to take part in the study, neither complete nor return the questionnaire. If you decide to participate, the questionnaire should take you about twenty minutes to complete. Please answer the questions in the space provided. Try to honestly complete the questions at the time you are most unlikely to be disturbed. There are no reimbursements associated with completing the questionnaire

If you have any queries or would like further information about this research project, please contact me during office hours on +267 71733914 / +267 73260013 or email me at rose@mylife.unisa.ac.za. Should you have any questions regarding ethical aspects of the study, you can contact the supervisor of the study at UNISA, Dr Margaret Ramukumba, during office hours at telephone number 012 4296719 or e-mail: ramukmm@unisa.ac.za.

The researcher appreciates your time in completing this questionnaire as well as your contribution to the successful completion of the study. A copy of my completed research report can be made available to you upon request.

Mrs Rose Kiwala Kajinga
Researcher

Dr Margaret Ramukumba
Supervisor

Guide to answering the questions

- Read the statement or question carefully to ensure understanding
- Insert an X in front of participants responded to each question in the column labelled "Response."

Section 1: Demographic information			
No.	Question	Response	Code
101	What is your gender?	Male Female	1 2
102	In which age category do you fall?	18 – 27 years 28 – 37 years 37 – 47 years 48 – 57 years 58 and above	1 2 3 4 5
103	What is your marital status	Single Married Divorced Widowed Separated Cohabiting	1 2 3 4 5 6
104	What is your highest level of education?	Never studied Non-formal Primary Secondary Tertiary	1 2 3 4 5

Diabetes history						
105	How long have you had diabetes (months/years)?	0 – 3 months 4 – 6 months 7 – 9 months 10 – 12 months More than a year	1 2 3 4 5			
106	What type of medications are you taking?	Diabetes Pills Insulin injection Both pills and injection	1 2 3			
Section 2: Perception of professional help for self-care support						
Statements in this section intend to look at the DM patients perception of professional self-care support						
No.	Statement	Response/code				
	Indicate your views regarding the following professional support activities The clinic nurses adequately taught you the following:	Strongly disagree	Disagree	Neutral	Agree	Strongly Agree
	Regarding Preparation and planning of meals					
107	Importance of measuring carbohydrate food portions per serving	1	2	3	4	5
108	Importance of eating snack between meals	1	2	3	4	5
109	Importance of adding appropriate servings of a variety of foods	1	2	3	4	5
110	Importance of developing a meal plan and following it	1	2	3	4	5
Risk factor control						
111	Importance of observing the sick day rules to you	1	2	3	4	5
112	Importance of strictly keeping your doctor's appointments	1	2	3	4	5
113	The importance of always carrying a diabetes ID with the required information	1	2	3	4	5
114	Importance of always carrying sweet foodstuff	1	2	3	4	5

Drug therapy						
115	Importance of proper storage of drugs	1	2	3	4	5
116	Importance of taking the recommended medication dosage	1	2	3	4	5
Physical activity (being active)						
117	Importance of regular moderate exercises for at least 3 days per week	1	2	3	4	5
Foot care						
118	Importance of soaking feet in warm water at least 2-3 times per week	1	2	3	4	5
119	Importance of wearing well-fitting shoes	1	2	3	4	5
120	Importance of drying between toes thoroughly after washing	1	2	3	4	5
121	Importance of using a mirror for inspecting feet daily	1	2	3	4	5
Self-monitoring						
122	Self-monitoring of blood sugar at least three times per day	1	2	3	4	5
123	Include blood sugar monitoring an exercise plan	1	2	3	4	5
124	How to recognise symptoms of high blood sugar	1	2	3	4	5
125	How to recognise symptoms of low blood sugar	1	2	3	4	5
Section 3: Patients' perceptions of nurses' motivational behaviours						
No.	Statement	Responses/code				
	How important are these professional activities to you?	Strongly disagree	Disagree	Neutral	Agree	Strongly Agree
126	Nurses to encourage you to ask questions about your condition	1	2	3	4	5
127	Nurses to listen attentively to your health concerns	1	2	3	4	5
128	Nurses to have time to motivate you to develop your self-care skills	1	2	3	4	5
129	Nurses do actively involve you in your self-care activities decisions and plans	1	2	3	4	5

Section 4: Patient's self-care management						
No.	Statement	Response/code				
	Describe how you carry out the following self-care management activities	Never	Rarely	Sometimes	Often	always
Meals						
130	Measure carbohydrate food portions per serving	1	2	3	4	5
131	Eat snack between meals	1	2	3	4	5
132	Eat appropriate servings of food per day	1	2	3	4	5
Physical activity (being active)						
133	Exercise regularly	1	2	3	4	5
134	Include blood sugar monitoring in exercise plan	1	2	3	4	5
Drug therapy (self-medication)						
135	Take your recommended medications correctly	1	2	3	4	5
136	Keep/store your medications correctly	1	2	3	4	5
137	Do take your drugs everywhere you go	1	2	3	4	5
		1	2	3	4	5
Risk factor control						
138	Carrying sweet foodstuff everywhere	1	2	3	4	5
139	Carrying diabetes ID with required information	1	2	3	4	5
140	Strictly keep your doctor's appointments	1	2	3	4	5
141	Observe sick day rules	1	2	3	4	5
Foot care						
142	Use a mirror for inspecting feet daily	1	2	3	4	5
143	Dry between toes thoroughly after washing feet	1	2	3	4	5
144	Soak your feet in warm water at least 2–3 times per week	1	2	3	4	5
145	Wear well-fitting shoes	1	2	3	4	5

Thank you for your time and participation

ANNEXURE E: ETHICAL CLEARANCE CERTIFICATE



RESEARCH ETHICS COMMITTEE: DEPARTMENT OF HEALTH STUDIES

REC-012714-039 (NHERC)

15 February 2017

Dear Mrs R Kiwala Kajinga

Decision: Ethics Approval

HS HDC/632/2017

Mrs R Kiwala Kajinga

Student: 3136-228-1

Supervisor: Dr MM Ramukumba

Qualification: PhD

Joint Supervisor: -

Name: Mrs R Kiwala Kajinga

Proposal: Examining the perceived nurses' support for self-management among type 2 Diabetes Mellitus patients in Botswana.

Qualification: MPCHS94

Thank you for the application for research ethics approval from the Research Ethics Committee: Department of Health Studies, for the above mentioned research. Final approval is granted for the duration of the research period as indicated in your application.

The application was reviewed in compliance with the Unisa Policy on Research Ethics by the Research Ethics Committee: Department of Health Studies on 15 February 2017.

The proposed research may now commence with the proviso that:

- 1) The researcher/s will ensure that the research project adheres to the values and principles expressed in the UNISA Policy on Research Ethics.*
- 2) Any adverse circumstance arising in the undertaking of the research project that is relevant to the ethicality of the study, as well as changes in the methodology, should be communicated in writing to the Research Ethics Review Committee, Department of Health Studies. An amended application could be requested if there are substantial changes from the existing proposal, especially if those changes affect any of the study-related risks for the research participants.*



University of South Africa
Pretorius Street, Muckleneuk Ridge, City of Tshwane
PO Box 392 UNISA 0003 South Africa
Telephone: +27 12 429 3111 Facsimile: +27 12 429 4150
www.unisa.ac.za

3) *The researcher will ensure that the research project adheres to any applicable national legislation, professional codes of conduct, institutional guidelines and scientific standards relevant to the specific field of study.*

4) *[Stipulate any reporting requirements if applicable].*

Note:

The reference numbers [top middle and right corner of this communiqué] should be clearly indicated on all forms of communication [e.g. Webmail, E-mail messages, letters] with the intended research participants, as well as with the Research Ethics Committee: Department of Health Studies.

Kind regards,


Prof L Roets
CHAIRPERSON
roetsl@unisa.ac.za


Prof MM Moleki
ACADEMIC CHAIRPERSON
molekmm@unisa.ac.za



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